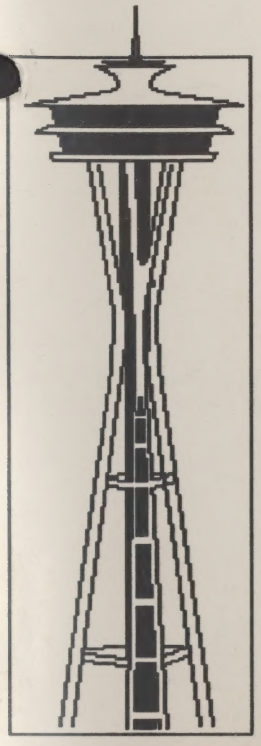

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User and Enthusiast

August 1987
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Puget Sound Atari News

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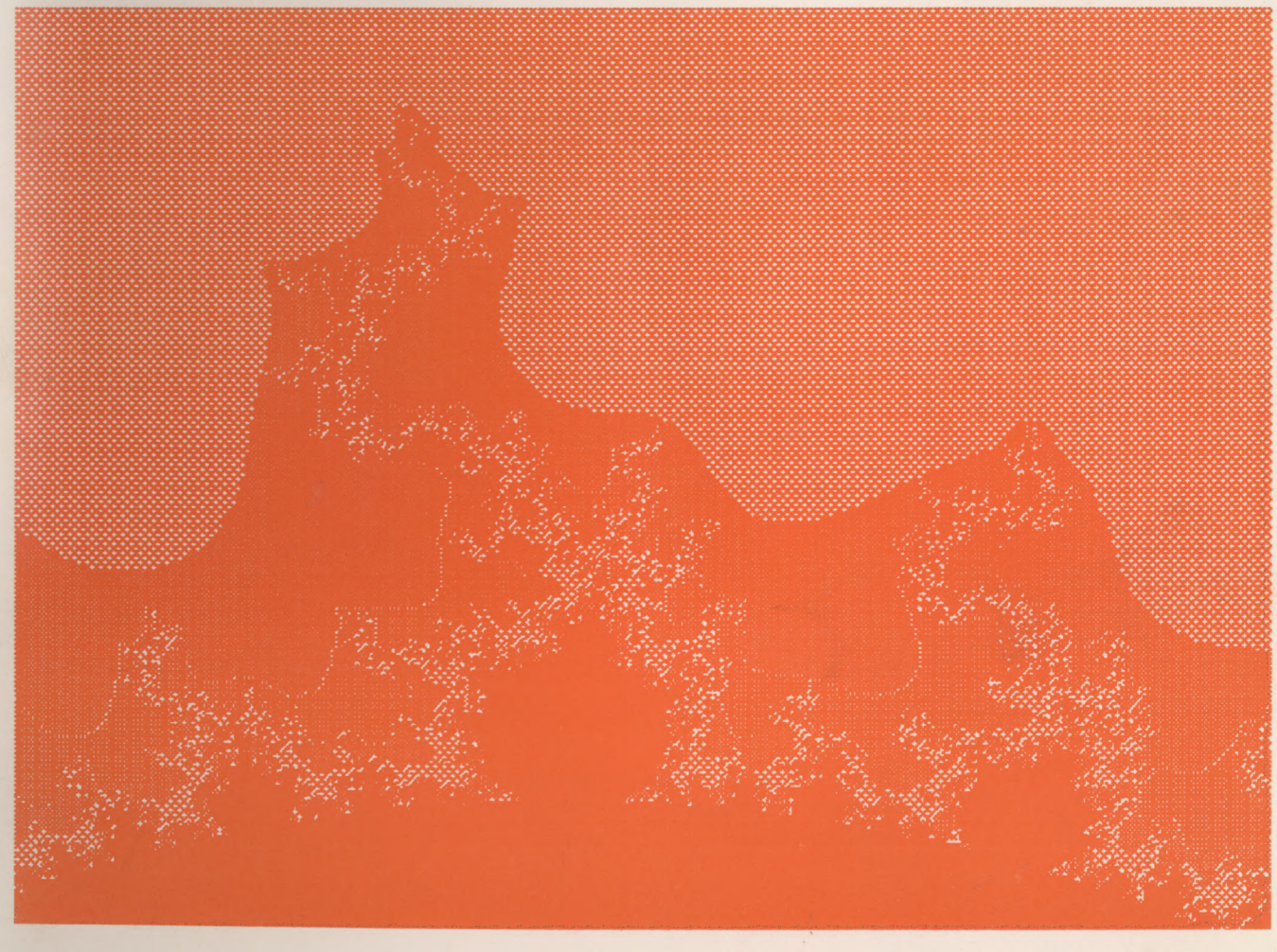

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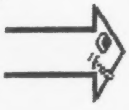

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PUGET SOUND ATARI NEWS

August, 1987 Volume 4, Number 8

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PRODUCT UPDATE AND INFORMATION
(Lawless XL Memory Upgrades)
By Thom Lawless, R-ATARI CLUB

I now have the P.C. boards for my 320K/576K, 800XL/1200XL memory upgrades. Brad Koda at BEST ELECTRONICS is also stocking them. I'm not sure of his price as of this report, but I'm sure it will be reasonable, call for current price and availability.

I am also looking to give a few samples of my work to 2 or 3 PSAN member clubs' Hardware Clinics/SIGS. All I'm asking in return is a timely, honest, review to be printed here in PSAN.

I have spoken to Greg Pringle from S*P*A*C*E. He gave me a 'definite maybe'. Greg is personally interested, but is not sure about the SIG in general. I have also spoken to Steve Drake and Al Cummings of STARBASE who are also interested and are currently deciding which upgrade for the 800XL to do this month at their hardware clinic. So, if your club is interested please contact me as soon as possible, if there is enough interest I may donate an extra board or two to the deserving clubs.

I am also available to any club holding hardware clinic's doing just about any type of hardware modification. I, of course, prefer to help those clinics doing my upgrades (I personally believe mine are the best there are..), but I will help with any type of modification. I would ask for as much notice as possible, a map, and a phone number/name for point of contact. Since I live on Whidbey Island, the weekends are best for me. I have done roughly 50 memory upgrades of various types, though not an expert on all, I am well versed in the procedures on most memory upgrades.

I'm also looking for 2 - 3 clubs outside of our PSAN membership to donate a P.C. board to. I would also like a review from them to be printed here and any other publication they may deem appropriate. Again if your club is interested please contact me as soon as possible. See the 'R' Atari Club news section for address/phone number.

For our member PSAN clubs I will discount these P.C. boards on any order of 5 or more. For non-member clubs I will discount on orders of 10 or more. Please call for current pricing.

I have been asked if any club can reprint/distribute copies of my previous articles of POWER MACHINES and POWER MACHINES II. The answer is YES, as long as you follow these simple guidelines. You must: credit PSAN for printing the article first, credit the author, print the entire article as it appeared in PSAN, any additional comments or ideas you add must be annotated as such, and finally, your club disclaimer concerning damages to equipment ect.. That's not very hard now, is it?

I would also like to clear up some misunderstandings about these upgrade printed circut boards. There is only one board. It is made to work in either the 1200XL or 800XL computer. Computer type is determined by selection of three jumpers located on the P.C. board. This P.C. board is setup to handle 320K/576K of RAM memory. If you decide to start with 320K of memory, and then later, decide to upgrade to 576K, it is only a matter of adding the RAM chips and connecting the appropriate wires to these RAM chips.

You do not have to 'rebuild' the entire upgrade. All hardware required to drive 576K of RAM is already built into

(Continued at next column)

WAR GAMES
Commentary
By Nick Berry, S*P*A*C*E

"I WANT MY MEGA ST!!!" These words regularly resound off the electronic walls of BBS's. There are many who are waiting for the release of the new Atari MEGA ST, and they have been waiting for some time. ATARI has had operating units and has been promising delivery since the first of the year. So what's the hold up? The answer, I believe, lies with Commodore, and the release of the new AMIGA 2000. I'll bet ATARI could have been shipping MEGA's early last spring, if they had wanted to, but I think the Tramiels want to have the MEGA ST come out at the same time as the AMIGA 2000. This generates more interest and the MEGA won't get "forgotten" in all the hoopla of the 2000, which could have happened if it has been released several months sooner.

This is the first battle in my proposed "War Games". The second one will come in time for the Christmas shopping season. Commodore has just invested a fair amount of money in developing the new AMIGAs. ATARI, on the other hand, hasn't had to spend much at all on the MEGA. So who do you think could best survive a "price war". I forsee prices slashed on the 520 and 1040 ST's this fall. I'm sure the Tramiels would love to see Commodore brought to it's corporate knees, and with it's limited ability to cut prices combined with the in-house fighting and various executives getting the boot out the door lately, ATARI seems poised to do some real damage.

Well, who knows if this scenario will come to pass exactly as I have made it out, but certainly in the next few months we should see some interesting things take place.

****

(Product Update and Information - continued)

the p.c. board. Another item which has been overlooked. You do not have to wait 10 - 15 seconds to reboot this system after you have turned off the power. It will reboot just like the original 64K computer did.

I know there are some of you asking about software compatibility. You've had a Bucholz type upgrade and found that you can't use certain software. As I stated in my original article, I have not found a single piece of software that will not run because of this modification. I did not say there are none, it's just that I haven't found any. I own a lot of software, I have some 130XE software and it all runs... I'm sure there will be some software developed to take advantage of the 130XE's special memory access modes, these may or may not work on this type of modification. All I know for sure is that all the present 130XE software I have runs. As a matter of fact I'm using ATARIWRITER+ XE version to write this article, and, as you can see it works!

Well, I hope that answers most of your questions, and saves us all a lot of worry. If you have any further questions please feel free to contact me via 'R' ATARI CLUB.

We want these types of ideas to spread. In that way we will get more software to take advantage of the extra memory. With these types of upgrades the 8-Bit Atari's have become the most powerful 8-Bit machines ever, (they were always the best!). So spread it around!!

****

ATARI RUMORS

(Reprinted from ZMAG Issue #60, July 4th, 1987)

DTACK GROUNDED INC. OFFERS FREE FAST BASIC TO ALL USER GROUP MEMBERS

DTACK Grounded Inc., a New Mexico based ST software firm, has announced that it will offer its new DTACK BASIC to over 400 Atari user groups across the country. Each group, upon receipt of proper identification, will receive free 63 DTACK BASIC disk labels, one or two master disks (depending on the size of the user group), and ten DTACK BASIC manuals. The catch? There is none! This offer is being made only to user groups, who are expected to distribute DTACK BASIC to its ST owners for a nominal fee (the user groups will define a price - no more than a normal user group library disk).

DTACK BASIC is touted to be the fastest ST BASIC available today. A benchmark test between DTACK, GFA, Fast, and the newest ST BASIC showed DTACK BASIC to be the fastest by a substantial margin. The benchmark used was in an advertisement that appeared on page 45 of the May 1987 "ST Applications" magazine.

For further information, contact your local Atari user group.

EPYX...ARE THEY LISTENING?

Rumors abound on reasons why Epyx has practically refused to support the 8-bit line of Ataris. However, the folks at Epyx seem to be waking up to our cries. Apparently, many Atari users have mailed in letters to Epyx requesting (or maybe even demanding?) them to release several of their most popular titles such as "Destroyer", "Summer Games II", "Winter Games", "World Games", and "Championship Wrestling". Keep those letters coming!!

Send all requests/demands to:

EPYX, Inc.
600 Galveston Drive
Redwood City, CA 94063

BLACK PATCH GOES THE DEEP 6

It's official, and it has been official for a few weeks now. Black Patch Systems, a mail-order Atari hardware/software house has been declared bankrupt by its owners. The Better Business Bureau claims to have had many reports from angry computer owners, many of them claiming to have placed an order that was never filled and no refund given. The BBB suggests filing a complaint quickly, if you have had similar problems with this company.

NEW ATARI DISK DRIVE

Atari has announced at a recent CES show the arrival of an upcoming Atari 5.25" disk drive (actually a redesigned and enhanced 1050) *(Ed., model XF551)*. The new drive will be double sided, double density, and will operate about twice as fast as the soon-to- be-discontinued Atari 1050. The new drive will be smaller than the 1050 (between the size of the 1050 and an Indus GT) and will match the color and styling of the Atari 130XE computer.

The DOS for this drive will be written by OSS, Inc., who have had a long lasting relationship with Atari disk drives and disk operating systems. The new DOS (named "A-DOS", for - what else? - Atari DOS) was originally designed to run with the now defunct 3.5" Atari 8-bit drive. The DOS is nearly complete, but the drive ***[Continued at bottom of next column]***

ANSWERS FROM ATARI

By Bill Silverman, Editor C*D*A*C*Enthusiasts

(Excerpts from the June C*D*A*C*E Newsletter via ZMAG #60)

Here are some often asked questions, and their answers about Atari products courtesy of Neil Harris of the Atari Corporation.. (6/10/87).

Q: When will the new products be shipping?
A: The XEP-80 and the SX212 (80-column for 8-bit and the new modem, respectively) will begin manufacturing any moment now for delivery around the end of June. *(PSAN Ed., Our latest info is that the XEP-80 is now due in August.)* The Mega ST 2 and Mega ST 4 are already on the way to Europe and are scheduled for North American delivery in early July. The Atari PC is also due in early July.

Q: What about the blitter chip upgrade?
A: It should be available for current ST owners around September. It will cost around $120. The final form of the upgrade is not yet set --it may involve a board swap rather than an add-on.

Q: What about PC emulators for the ST?
A: Both Atari's own software emulator and one called PC-Ditto should be released during the summer. A hardware emulator is still in the works for later on.

Q: When will new ROMs be available for the ST and what changes are included?
A: The ROMs are done and have gone into production. Availability as a separate item may take a while, though -- we need ROMs for the Mega ST. These ROMs support the hardware blitter (optional) and fix some TOS problems, like the infamous underline bug and the RS232 handshaking. Parts of the system have been sped up, like character output. A list of exact changes will be posted shortly.

Q: What's happening with the 8-bit emulator *(The "ST Transformer", Ed.)*?
A: The author *(Darek Mihocka, Ed.)* finally agreed to release the source code to the public domain, so Atari will allow him to distribute it along with our ROM code. Now we want to see you hackers out there work to speed it up -- at the moment it is only 1/4 the speed of an 8-bit.

Q: What else is new at Atari?
A: On the business side things are great. We just announced a 2-for-1 stock split, effective next week. New TV commercials have been produced for the ST (yay!) and the video games. We are also working on campaigns to support MIDI music and desktop publishing.

The CDACE newsletter electronic text edition is available nationally in the XE Roundtable on GENIE in the Everything Else Library. The Publishing Partner version of the newsletter is located on the ST roundtable GENIE in the TOS library. (As some of the fonts used in the newsletter are commercial products you will need to purchase the appropriate font disks or reformat the text for public domain fonts.)

CDACE mailing address is: P.O. BOX 2216 ALBANY, NY 12220. BBS is: (518) 237-1232.

****

will take a little more time to finish. An Atari contact says the drive about 60% finished, and after testing is complete Atari should have the drive ready to ship "around late Summer to late Fall". *(Ed., Which year?)*

****

BBS UPDATE

The Latest 8-Bit Files Available For Downloading.

By Wally Wong, BRACE

From CompuServe...

Telecommunications - Trent Dudley's **AMODEM 7.5** is now available. I haven't used it (Express! does the job for me.), so I can't say much except it supports Y-modem protocol. Y-modem handles 1024 byte blocks where as X-modem handles 128 byte blocks. Y-modem is theoretically faster, but users of PC pursuit say otherwise. It's shareware so if you like it, support it by sending the author your loose change. There's a lot of files associated with this program. BROwse for AMODEM 7.50

A beta test version of Keith Ledbetter's **1030 EXPRESS Version 3.0** is available. Make sure you down load the accompany doc and letter file for set-up instructions. X10303.LTR AND X10303.OBJ are two of the files. I forget what the doc file is called.

Graphics - If you have Atari's neat little 1020 plotter, there's two **ZPLOTTER** ARC'd data files which in themselves contain several more when de'ARC'ed. Haven't heard of the ZPLOTTER program and you have had the 1020 for months now??!!! Shame on you. You can obtain ZPLOTTER from CIS or GENie. You do not need the ZPLOTTER program to use these data files. After de'ARCing them, just "COPY" the files directly to the 1020 using the "C" selection from DOS 2.0 or 2.5, ie. D:ZPLOTA.DAT, P: or the appropriate command of your DOS. ZPLTC2.ARC AND ZPLTC1.ARC are the data files. Remember, you need ARCX12.COM to de'ARC the files.

Utilities - **800XL PIO CONTROLLER**, a hardware modification for 256K 800XL's. PIO is the parallel port. It's Bob Wooley's great project, I'll let him describe it in his own words - "Parallel buss hardware project that allows you to write your own handlers. It uses the PIO hardware in the XL/XE machines and the RAM under the OS ROM to intercept SIO calls, interrupts and RESET so you can do your own thing with them. A ramdisk handler and a coldstart switch are included. 256K required fo the ramdisks, but the controller itself is entirely external." You'll have to read the text files on this to believe it. PIOCRL.TXT, PIOCTL.OBJ, and PIOCTL.TXT are the files.

QUIET.COM - "This (QUIET.COM) is a version of SILENT.COM that does not have the RESET catch to keep the modifications alive. Use this one if you have some odd programs that might not enjoy the RESET catch (and die on RESET)."

SETFA2.COM - "This 179 byte "command" is version 2 of 'SETFAST.COM'... It will now set all of your contiguous HAPPY enhanced 810/1050 drives to buffered FAST WRITE. The original version only set drive one."

SILENT.COM - "This little 162 byte "command" silences the I/O beeping noise, turns off the key click and speeds up the key repeat rate. This patch will NOT disappear when RESET is pressed (isn't that nice?). Intended for the quiet at heart and any DOS. Created while playing with the OS on an 1200XL (16-Dec-1984). NOTE: Key click and key repeat rate will not be changed on 400/800 models."

SYNCNF.BAS - "This program is written in BASIC XL. It permits modification of the SYNFILE+ control file."

SYNDB.BAS - "This program is written in BASIC XL. Its primary purpose is to document your database. It will take

(Continued on next page)

A SMALL BYTE

The Warning Signs Of An Avid Computer User.

By Bob Hitt

(Reprinted from the Daily World)

I recently wrote about the possibility that computers can be hazardous to a marriage.

The morning the column came out, I received a call from a woman who said my description of an avid computer person fit her husband perfectly.

While things had not reached the point of calling in the lawyers, that particular option was slowly working its way to the top of the list.

She wanted to know if I would have a word with her husband. Just let him know that all was not well.

Poking about in someone else's marriage did not seem to be a prudent idea. A quick review of my contract with The Daily World revealed no possibilities of getting any hazardous duty pay. I don't mind occasionally doing someone foolish, but I have already used up all my foolishness for this year. I had to refuse her request.

There is still a way that I might help this poor lady. I decided to reveal some warning signs that would alert computer users to the possibility that they are getting close to the edge of acceptable behavior.

The Warning Signs:

1. Do computer words creep into your conversations regardless of the subject?

2. Is your house strewn with computer magazines, some of which are not even about your type of computer?

3. Have you been banned from some of your friend's homes because after your last visit someone spent the money saved for a new refrigerator on a new core hard drive?

4. Does your spouse automatically set your dinner next to the computer?

5. If you leave town to visit friends, do you get an overpowering urge, after a few days, to visit a computer store just so you can run your hands over the keys?

6. Have you called in sick to work the day after receiving some new software?

7. After going out to work on the computer one evening do you suddenly realize that it is getting lighter outside and the birds are beginning to twitter?

8. While at a party with the date of your dreams, do you dump him or her so you can listen to two people arguing over the relative merits of Lotus 1-2-3 and Supercalc IV? Do you do this so that you can decide which program is best, or set them both straight about the virtues of Excel?

If you match the criteria in only one or two warning signs, don't worry. You are perfectly normal, and no one should have any complaint about you.

If you match three of these warning you are on the edg of acceptable behavior, but you are still a decent person. If you have four of the warning signs you need to re-assess your

(Continued on next page)

SUMMERTIME, and *The Disk Drive Is Empty....*

By Al Cummings, STARBASE

The annual departing of the pale has come again. No one wants to sit by the computer and do things like use a modem or write an article for the newsletter and I don't blame them. The good weather is gone before you know it and most of the users are back ready to go again before the first leaf drops from a tree. This year doesn't seem as bad as some years, maybe because I have been too busy to notice and because we have had so much going on lately. The clubs have done extra work geting things to do this year and more folks are staying around a little bit more.

Having said very little with the lengthy lead-in, I will get to the point and give you some quick reviews of what new progams have been passing though here. I have spent more time than I had playing games and don't mind it a bit since both of the latest ones were great.

First, I got RoadWar 2000 and really got into playing that. As it was reviewed twice last month, I won't say much except it was very easy. If you have ever played a role-playing game, this one is a breeze. As usual, save a lot and watch your stats. I finished this game in 6 hours and found it was hard to do much wrong if you read the hints in the manual. I am not sure if the game resets everything if you start over, or if the hard stuff is in the same city. I will probably try it again soon, which I won't do very often. Good Game.

Are you one of those people who look in the newspaper everyday and read the bridge column, but have never gotten a chance to play in a real match of 4. I am and when I saw Bridge 5.0 for the ST I bought it and had to go home and try a hand or two. The game is quite fast and will play and even bid for you, which is nice; but for a beginner, this is not the one to choose. There is no reasoning to how the computer bids, and I am sure it cheats (Well, maybe not, but it sure is dumb as my partner and never misses on its own). The game is all run by mouse, and if you don't the difference between 2S and 3NT, this is not something to get. But for sitting around and playing bridge with a partner who does not know what a trump suit looks like, the game plays fine. 2 stars!

Just so I don't look like all I do is play games, I have working with Word Writer this month. It is a lot like First Word and also has a dictionary, thesaurus, and works with other programs from Timeworks like Data Manager. I will be giving some more time in the coming months and report more then. It's reported to be as good as there is for the ST.

This seems to be the month for new printers. STARBASE bought an NX-10 for the librarian; and after Steve had used it for a couple days he decided to replace his old 10-X. Star stills makes good printers, but there best feature to me was the cheap ribbons. They went to the cartridge type ribbons and the cost went up the almost $10 apiece. Anyhow, I have been looking for a printer to use with the ST; and as I scanned the Comoputer Shopper, out jumps a Star NP-10 for only $129. It sounded like what my budget and I had been looking for, so I called Lyco Computers and they sent it out COD. It took a week and cost $146 delivered. Rated at 100 cps and 20 cps for NLQ, it might turn out to be a great deal. Various problems have not let me get it set up yet, so watch for future reports and some graphics soon.

Well if the truth must be known, I do play games more than anything else including writing for the newsletter and working on the BBS. My current project (as opposed to game) is Alternate Reality. This game has been around a long time on the 8-bits and was pretty good; but the ST version has added a lot of features that add to the game. So when I found version 2.0, I had to buy it. Do not buy the game unless it says version 2.0 as the earlier versions were too buggy to play. I really liked the looks of the games and the new features, but I could not stay alive long enough to get a player built up. I put it away and went on to other things until last month when I read something about a guide to AR in another newsletter. Having no idea what it was, I asked Tom Tjarnberg who knows more about Datasoft games than anyone else in town. He said he had AR and after some begging, he let me look at the map and get some clues. That was all I needed, and I am moving along very well lately, and am looking forward to the next scenario.

Well, I have to finnish this, get to the printer, and then I might even lay outside until my basement tan turns dark!

****

(BBS Update - continued)

any SYNFILE+ set of files and display/print its field definitions. Some field characteristics shown are: TYPE, LENGTH, SORT, LOOKUP TABLE VALUES, FORMULAE, ETC."

SYNMEN.BAS - "This program is written in BASIC XL. It is a menu program to call SYNFILE+ utilities. These utilities are SYNDB.BAS, SYNCNF.BAS & SYNTABL.BAS. A help section explaining the utilities is also included. If you name the menu program AUTORUN.BXL and have the run time BASIC XL package, (renamed to AUTORUN.SYS), the menu program will autoboot."

SYNTAB.BAS - "This program was written in BASIC XL. Its purpose is to allow SYNFILE+ table lookup fields to be modified. These fields can have their length changed, values changed or values added."

SCRDMP.COM - "Assembled ML file of SCRDMP.M65 in this dl ... this version is relocatable, thanks to RELOC.OBJ (thanks, Keith!) ...the file is a 'resident' dump for printing GR. 0 screens to a printer ... see SCRDMP.TXT"

UTILIT.BAS - "This is my 1st serious attempt to program. It is a sub-routine for locking, rename, format(1&2d),etc... I think the screen fades are good. Let me know what you think. Thanks Larry Ramey 72750,160. PS- I live in a black & white world (at least my monitor is b/w.)"

SETFAS.COM - "This "command" activates FAST WRITE on HAPPY enhanced 1050 (ROM 2) or 810 (version 7) drives (drive one only). This is a must for SpartaDOS's Ultra-Speed to work correctly. If the program is successful, it will return a printed message. This program should work with any disk operating system."

These files are now available on CIS and probably on GEnie. I would look on GEnie first, it's less expensive.

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(A Small Byte - continued)

relationship with the people around you. You can still save yourself by taking prompt action.

It is not to late to re-enter society. If you have five or more of the warning signs you need help. If you are not single now you soon will be. Just don't call me.

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NEW ROMS FOR THE ST
"Hands-On" Observations!

By Bill Penner, KC-ACE's

Well, have you heard about the new ROMs available for the ST? Well, there hasn't been a lot of press about them, except on some of the telecommunication systems like GENIE. The new ROMs were written to support the Blitter chip and were recently released for use. The Blitter chip is not needed to run the ROMs, but the ROMs are needed to run the Blitter chip.

If I don't have a Blitter chip, then what good are the ROMs? Well, that's easy. In addition to the routines to support the Blitter chip, ATARI made a few improvements. Probably the most noticable of the improvements is an adoption of the TWISTER style of sector skew. The system default now will format the disk as if it was formatted with the TWISTER program. If you are not familiar with TWISTER, it was included in a recent START issue and formats the disk in such a way that the read speed is nearly doubled. The TWISTER program will also set up a few more sectors on the disk and about 800K is available on a double sided disk. The new ROM implementation did not include the extra disk space (I assume to retain system full disk copy compatibility).

About the second most noticable change was the speeding up of the window handling routines. The information that I have seen indicates a 20% increase in speed. I can't vouch for that number, but it is quite noticable and the 'screen draws' are very close to a flash.

The system clock operation was modified slightly. I have not had the chance to check the changes yet, but the gemdos and system clocks have been linked together. In the earlier ROMs, the clocks were separated after the system was booted up. If you changed one clock (like using Tsettime and similar commands) the other clock would not be changed (like the Settime and similar functions). If you tried to write some software to set the system time, both clocks had to be set for all programs to operate correctly. Otherwise some programs would recognize the old time and others would recognize the new time.

The BIOS character routines have been speeded up. This is only slightly noticable.

Several devices may now be connected off of the DMA port without special software.

A pleasing change was made in the window operation. Now windows will continue to scroll when continuing to press the mouse button on the move bar. With the old ROMs, you must press the mouse button every time you wanted to scroll through information in a window.

Single mouse click requests now work. If an application requests a single click (instead of a double click) the application will get a message after a single click.

The APPL_TRECORD and APPL_TPLAY functions now work.

The buffer for printing or showing a file from the desktop has been increased. This results in the system doing fewer accesses to the disk and results in a decrease in time required for the system to return after a print file command.

The show option is the default when selecting a non-program file.

An alert box has been added when doing either a print screen from the menu or saving the desktop.

Fewer disk swaps are required for single disk file copying.

And more disk errors are now checked for.

These are the most important changes that I am aware of. There are a few more changes, but most of these were fairly minor.

Now for the drawbacks of the new ROMs. Remember the old problem with the revision B ROMs for the 800? Some POOR programmers decided that it is not important to follow ATARI software guidelines. These guidelines tell which operating system access points and variables that can be used by software. These access points and variables are ones which will not changed in future upgrades made by ATARI. Well, the problem is here again! I have discovered several programs which do not work (CRASH, BOMB, HANG, etc.). Most programs work just fine under the new ROMs, but I have found that the following will NOT work: GOLDEN PATH, CHAMPIONSHIP WRESTLING, and an unofficial copy of a program with a very old name and a very new look (won't say the name cuz it ain't out yet and my copy ain't exactly official). Now you say that maybe to get the speed for the graphics that you must cheat a little? Well, SUNDOG seems to work just fine, and so does BARATICUS. It is unfortunate that some software developers feel that they must make some software shortcuts!

OK, now where do you get your copy of the ROMs? You can ask for them at the local dealers and they MAY have a copy of them. When I checked recently, most places did not even know they existed. I received my ROMs from IB COMPUTERS in Portland, OR.

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BRODERBUND SETTLES SUIT

(Reprinted from ZMAG #61, July 10, 1987)

Broderbund Software and Pixellite Software recently announced an out-of-court settlement on their copyright suit against Kyocera Unison.

Under the terms of the settlement, Kyocera Unison of Berkley California, will pay an undisclosed sum to Broderbund of San Rafael California, and Pixellite, also of Berkley, and has permanently agreed to remove its Printmaster graphics program from the market. In return, Broderbund and Pixellite have agreed to drop pending claims against Kyocera Unison.

In October 1986 a federal district judge in San Francisco ruled that the "look and feel" of Printmaster's user interface violated the software copyright on Broderbund and Pixellite's Print Shop program, a decision that has been relied upon in other software copyright cases.

In December, the court ordered Kyocera Unison to stop selling Printmaster. Since then, the company has released Printmaster Plus, a version of the program that both sides agree has been significantly altered to avoid infringing Broderbund and Pixellite's copyright.

Product Reviews - ST

SUB BATTLE

A Game Review by Paul Bolme, STDIO
July 14th, 1987

By EPYX, for all ST Computers

I recently purchased a copy of Sub Battle from EPYX. The program comes in a very slick package and is touted to be one of the "Master's Collection". Don't be fooled- I have played it for a couple of weeks, and I have to say that it is one of the most bug-ridden pieces of trash that I have ever spent money for. It's programs like this that give pirating a good name.

Let's be clear: Submarine Simulators only appeal to a certain percentage of people in the first place. But I am one of those who falls in the group of people who has an interest in these types of programs.

Let's go over a few (and only a few) of the problems that I have encountered:

1) When you boot the program, you are welcomed with what can be best described as a "flickering mouse". How irritating is it? Have you ever seen "interlace" mode on the Amiga? Now, I know something about programming, and I have have never seen any program on the ST, or any computer, that just sits there, and flashes the mouse. It's just a case of bad, sloppy programming.

2) If you hit a key, you have about a 50% chance that they keystroke will be acknowledged by the program.

3) When you move the mouse to a menu, the menu takes a noticeable while for the menu to drop down.

4) When I use the mouse to click on a new direction (for your sub to move in), about 1/3 of the time the direction it changes to has absolutely no relation to what you clicked on.

5) I have been able to ground myself in the middle of an island, fire torpedoes, check all my gauges, but not move. Great beta testing.

6) Several of their coordinates are wrong. I have had orders to drive down main street of some tropical islands.

In addition to this, there are several design flaws in the game:

1) Graphics are fair at best. It appears to be more or less a port of their C-64 version.

2) The "time compression" doesn't work well. Time compression is a feature that is used to pass away some of the boring days waiting for something to happen. Unfortunately, time compression doesn't work that way in this game. The way it works, if you are stationed at Midway and get bored and go to time compression mode, the Japanese fleet will zip by you at warp 10 before you have a chance to breath.

3) There are several other aspects of the game that, in my opinion, are simply not realistic.

It's shocking to me that EPYX would let a program of this quality be shipped under this name. I have sent a letter of protest to EPYX, but I don't know what the outcome will be. I haven't read any reviews on Silent Service, but it can hardly be worse. My recommendation: Don't buy it. Don't even pirate it. It's not worth the effort.

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GREAT BATTLES

A review by Dave Hanthorn (STDIO)

A Wargame from Royal Software
For All ST Computers

Finally! Finally, now that I have had my ST for two years, somebody has come out with what I would consider to be a true wargame for the Atari ST. Commendably, this is not just some spin-off from the eight-bit world or from some brand X computer, but an all original work developed on the ST for the ST! And not just one game either, but four separate and distinct battles in the same package. This is, well, GREAT!

If you have read any of my previous wargame reviews in the PSAN newsletter, you already know that I have an interest in wargaming, and that I have been very disappointed in the distinct lack of wargames for the ST. Well, with the release of GREAT BATTLES by Royal Software of Eugene, Oregon, that lack is beginning to change. This package includes two famous Napoleonic battles and two famous American Civil War battles, and they really are true wargames in the "traditional" boardgame sense of the word.

I started out (at the suggestion of the manual) playing the Waterloo battle, and quickly found that although the instructions in the manual about moving the units on the mapboard were not real clear, in actual practice it was very easy and fast to move units with the mouse. A couple of very nice features of this game are that you can move your units in any order, and you can "take back" any move of any unit at any time right up until you enter the battle phase of the turn.

I then moved on to the battle of Austerlitz (which historically occurred several years previous to the battle of Waterloo). The games all include the kinds of features that the experienced wargamer has come to expect, such as various types of units (i.e. infantry, cavalry, artillery, etc.) and various types of terrain (i.e. plains, hills, forest, rivers, etc.) that affect the movement and fighting capabilities of the various types of units in various ways.

Next I was trying the battle of Shiloh from the Civil War. By now I had become used to such additional features as the "effectiveness" and "morale" ratings and "primary weapon" types of each individual unit, and how these were changed by movement and battle, and in turn how they affected the unit's capabilities in movement and battle.

And by the time I at last got to the battle of Gettysburg, I was becoming an experienced "commander", using strategies and tactics that would take advantage of the terrain and of my armies' strengths and of the enemy's weaknesses, to lead my armies to a glorious victory over the vanquished enemy. (Well, at least sometimes I won).

The games give you the option to play either side against the computer, or to let the computer "referee" a game between two human players. There are several skill level settings for the computer that will keep the games challenging to you from the rank of "raw recruit" right up to "commanding general". This game won't become "too easy" and boring to you for a long, long time, and even if you should get to the point that you can beat the computer even on the highest skill levels, you can go out and find some smart human player to give you all the competition you would ever want.

Although the documentation isn't always extremely clear at first, once you have played a game or two it is pretty easy to figure everything out. Overall, this is a very good

(Continued at bottom of next page)

Product Reviews - ST

PLUTOS

Game review by William F. Estes, STDIO

By Mindscape Inc, for all ST Computers
$29.99

Plutos is the kind of game that only brings mindless violence to mind. This is OK, though, some people might like a different type of challenge other than just shooting everything that moves or doesn't move. Your goal is to destroy as many objects as possible while picking up fuel and avoid being destroyed by contact with any moving object or tall stationary towers. Nothing new here so far, is there? While the concept isn't new, the design and movement of the graphics part of Plutos are very well executed. The scrolling movements of your space ship and the constant bombardment and oncoming objects that you must destroy are very smooth and take advantage of the power that an ST can offer.

While playing Plutos I am very much impressed with the degree of difficulty that continues to be put into play. Each succeeding level becomes more and more of more objects and more objects that fire upon your spacecraft and need to be destroyed. As you approach the end of each level you must destroy the eyes that look at you and they require many direct hits before they will be closed and allow you to proceed to the next level. The best way to play Plutos is to have two players firing at the objects and collecting the fuel. Teamwork seems to be the best way to proceed without killing your wrist and trigger finger, not to mention your joystick.

Plutos comes to us from Mindscape, Inc. who is distributing this software in the United States. Tynesoft Computer Software is the company that originally did the programing, but the name of the programmers isn't mentioned except for the mention of Dr. J on the title screen. While it may seem that I don't care for Plutos, this is not the case. I happen to be one of the people who like mindless violence and enjoy hours of what I like to think of as "Self Therapy". Again, I would remind you that Plutos doesn't offer anything new, but they do it very well on an old theme that has still stood the test of time. Plutos lists for $29.99, but is available locally for $26.95.

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(Great Battles - continued)

package, and well worth the $35 price tag, considering that many eight-bit computer wargames sold at $40 to $80 and weren't as good this one.

This isn't the "monster-sized" wargame that I have been hoping somebody would do on the ST (the machine is certainly capable of supporting a "monster" game), but the graphics and features of the ST are well used, and there are many hours of enjoyment to be had here.

I would certainly recommend GREAT BATTLES to all of you wargamers out there. I would also recommend it to you folks that have never played a computer wargame before; you might just discover all the fun you have been missing out on. This game definitely sets a good "first" standard for the next ST wargame to try to outdo.

Thank you, Royal Software, for getting the ball rolling.

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BATTLEZONE

Reviewed by Bill Estes, STDIO

An Arcade Style Game for all ST Computers

Atari is putting out some software for the ST, and while they are doing this, they are not exactly breaking any new ground in the process. BattleZone, is an old 8 bit game that has been given new life by bringing it over to the ST. This time, Atari has done a great job, or should I say Andromeda Software, the people who did the programing have done an excellent job of bringing this old favorite arcade game to the ST market. The graphics are just about the same as they were in the arcade version, but with the color monitor on the ST, you see the different objects on the screen in different colors.

The scenario is that the year is 1999 and all nations have agreed to world peace. But power hungry rebels have let loose a huge fleet of robot war machines. It's up to you - and your vintage tank - to save the world! Outmaneuver and defeat rebel supertanks and flying saucers by watching your radar, listening for enemy fire, dodging behind pyramids, and maintaining nerves of steel.

All of this may sound easy, but once you start the game you will be assaulted by tanks, supertanks, missiles, and an occasional flying saucer. They never stop coming at you and all the while the tanks, supertanks, and missiles will continue their mindless assault until you and your tank are destroyed. Isn't that a pleasant thought. You score points by destroying all of the above. The only strategy that seems to work is to keep moving and if you can, position your tank behind a pyramid or other tall object to protect yourself from enemy fire. This can sometimes work against you, as the real goal of the game is to destroy the rebel machines while lasting as long as possible yourself. If you are good at quick shooting and have great eye to hand coordination, than this could be the game for you.

Getting back to the graphics. Vector graphics are used to create all of the objects on the screen except for the background, and they have been used very well with the power available with the ST. The movement of objects on the screen is very smooth as the enemy machines try to outmaneuver you and get into firing position before you destroy them. The enemy weapons that shoot at you are all the same color, orange. Flying saucers are a red, and the other obstacles on the screen are usually blue.

While this is a shoot-em-up game, it isn't just mindless violence and shoot everything in sight. It does require good reflexes and a good deal of strategy to defeat the tanks and missiles as you progress into the game. If you are also heavy in masochism then there are also six levels of difficulty to choose from. I'm content to start out at level one and progress as far as I can. My only complaint is that there is no "Hall of Fame" to list high scores or who made them. They do however list the high score made and will put it in your disk if it isn't physically write protected. Another good feature is that the game is not write protected so you can make a backup copy and store your original disk so it won't be damaged during normal play. Thank you Atari and Andromeda Software for bringing an old favorite back to those of us who still like arcade games. Enjoy this one folks, it is both fun and difficult.

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ENJOY THE SUMMER - ATTEND YOUR USERS GROUP MEETINGS!

Product Reviews - 8-Bit

PHANTASIE

Game Review by Penny Ornston, R-ATARI CLUB

From SSI, for All 8-Bit Computers
List price $34.99

I have probably played hundreds of games in the past year, some good, some bad, and most somewhere in between--but far and away my favorite genre is the fantasy role-playing game. PHANTASIE fits very neatly into that category, and in my opinion is one of the best.

PHANTASIE is more of a beginner game than an intermediate or advanced, complex adventure. Your goal is simple and straight-forward. You lead a group of up to six adventurers on a quest to rid the land of the evil menace of Nikademus and his Black Knights. Of course, you must be strong enough and have powerful aids to defeat them. You can receive invaluable clues along your journey, in the form of scrolls, and these can be routed to your printer and/or screen so you can always have a hard copy of valuable information. This comes in very handy when you don't want to have to sit there and copy everything down by hand! The scrolls are very important in teaching the history of Gelnor, and also in explaining your many goals in the quest.

There is a great deal of realism built into this game --assuming that there can ever be a "realistic" fantasy-- in that stores can run out of items if you buy too much, the characters don't automatically advance with their experience points, but have to pay for training to advance a level; and new spells must be learned.

The experience points are calculated to almost astronomical proportions, but don't fret if your wizard needs 200,000 more experience points to advance another level. A few creatures can give each of your characters as much as 64,000 experience points for destroying them! Gold, on the other hand, seems difficult to come by, at least in the early portion of the game. Later on, you will find that all your characters have their maximum in their bank accounts, and you won't know what to do with the new items you find! (You are limited to 9 items per character, and that includes all weapons, armor and potions).

The rulebook for the game is somewhat sketchy, but the game is so easy to play that it isn't a disadvantage. All player movement can be done by joystick (hooray!!!) and all player options are on nice, neat pull-down menus that are so easy to use ANYONE could do it without being confused. The menus are especially useful during combat mode, where you can take your time in selecting exactly what each player will do before the melee round begins. Also, while traveling, you can stay on a menu to heal, give additional magic via a magic potion, or just check stats for your characters without having to worry about attacks. That is, until you resume movement, and then WATCH OUT! There are some real tuffies out there!

This game is definitely a beginner game, but for those people who have tried to get through an Ultima, only to give it up as hopeless, this game will make you feel good about fantasy games again.

I did find one problem (and it seemed major to me at the time), the program can crash. It only happens on the GELNOR disk, and happens if a stray key is hit while using that disk. I called SSI's hotline to ask about it, and they told me that it was a bug in the program, but they were working on a new version for 8-bit Atari, and would furnish the updated version to original PHANTASIE purchasers free of charge.

(Continued at bottom of next page, right column)

DAISY-DOT

An 8-Bit Printing Utility For Use With Star/Epson Printers.
Reviewed by Nick Berry, S*P*A*C*E

DAISY-DOT is a Share-Ware program which will print out any ASCII text file in a high-resolution font of your choice in four different print densities. This is a very fine program written and compiled in Turbo-BASIC by 14 year-old Roy Goldman.

To print out a document; it must first be created and saved to disk in straight ASCII format. This means no special control characters, which many word processors use, and no inverse characters. Next, you boot-up the DAISY-DOT program. First you tell it which font you wish to use (there are 5 fonts included with the ARC'ed version that I downloaded); and then the name of the text file to print.

Now come the magic choices. First is print size:

1) 1X = large.
2) 2X = normal size.
3) 2X draft.
4) 4X = small.

Next you choose the spacing between characters, measured in columns. Large lettering only needs a '1' or '2', whereas the small stuff needs at least '6' or more to be easily read. Then you're given the choice of: "START to print" or "SELECT to re-enter any changes".

When printing out your text, DAISY-DOT makes two passes for each line and advances the paper slightly between passes to achieve an excellent print quality.

Now comes the bad part. Many of the words at the end of each line will be cut off and continued on the next line. Since DAISY-DOT isn't a word processor, it doesn't have a word-wrap feature, so you need to go back to your word processor or text editor and rework the lines with a carriage return at the end of each to make everything look proper. Another problem, for some people, is that DAISY-DOT is written in Turbo-BASIC which until recently has only been available for the XL/XE machines. *(Ed., STARBASE, S*P*A*C*E, and probably other PSAN groups, currently have the 400/800 version of Turbo-BASIC in their libraries.)*

So far we've only looked at half of the program. The other half is a font editor to let you design your own high-resolution lettering for use with Daisy-Dot. Yes, I hear you saying, "So what, I've already got half-a-dozen font editors". But this one has a dot matrix of 16 high by 8 wide. That's twice the vertical resolution of a normal font, which gives you the ability to form letters with superb detail.

Daisy-Dot is a new program however, with room for growth and Roy Goldman is concerned with it's shortcomings and seems eager to improve it in whatever way people would like to see it go. I've been following the message board on GENIE (which is where I downloaded it from) and young Mr. Goldman is actively responding to all comments and suggestions concerning this program. Some of the improvements he has promised are a rewrite in Lightspeed C so that it will run on all 8-bits, support for more printers, added functions to the font editor and the ability to change density, character spacing and fonts all within a single document. It would appear as though Daisy-Dot will grow and mature, and could easily become one of the finest printer utilities available to the 8-bit ATARI community.

(Continued on page 11, right column)

ULTIMA IV
QUEST OF THE AVATAR

Game Overview by Penny Ormston, R-ATARI CLUB

From ORIGIN SYSTEMS, for All 8-Bit Computers
List price $49.99

Lord British *(Ed., program author's pen name.)* really out did himself with this one, making Ultima IV more of an epic event than a game. The scope of this game is phenomenal, being fully sixteen times larger in scale that Ultima III!

And this game takes the term "role-playing" a few steps further than any other, in that YOU are indeed the main character in the game. In order to initialize a new game, you are required to answer several moral questions as honestly as possible. Such questions as *"Thou art sworn to protect thy lord at all costs, yet thou knowest he hath committed a crime. Authorities ask thee of the affair, do you: A) break your oath by speaking honestly; or B) uphold honor by remaining silent?"*

After answering several such questions --of which there is no right or wrong answer, only your personal reaction to the questions-- your character's personality, and player-type are set. And you are on your own, at least at first, for among your many goals is to find and recruit seven others to join in your quest.

The Quest Of The Avatar is to actually become the embodiment of virtue. Such virtues as valor, honesty and compassion, along with five others, are to be sought after above all else! Your every action can affect these virtues for your character, and you can loose a virtue more easily than gain one. Even after you are made an '8 parts avatar', virtues are easily lost, thus putting a damper on any thoughts you might have of stealing all those treasure chests in the castle's treasure room, or of bragging of your Avatarhood to local citizens of the many towns.

By the time your character is an 8 parts Avatar, you are probably about half way through this multi-faceted adventure. Just when you think you've got it all figured out, you will find many more things that must be found or done! I can't help but wonder if it can ever be completed?

As for the program itself, there are a few things that are mildly annoying, but nonetheless unavoidable in a game of this complexity. One, disk access is frequent as new bit maps are loaded in every few steps. Also there is a great deal of disk swapping involved if you have a one drive system. If you have a two drive system, the program will take advantage of it, thus saving you the time and hassle of swapping disks so often. You will still have to swap occasionally, however, but not very much. I was even able to make the program crash on me at one point, something that has never happened to me with the previous Ultimas in spite of any foolish things I may have tried. In Ultima IV, you have an option to (h)ole up and rest, which can greatly restore hitpoints. Well, I found that while at sea, I could (x)it the ship and hole up and rest. Unfortunately, there are times when the hole up function will backfire on you, in that you can be ambushed by strange creatures. I thought this was particularly amusing when it happened to me while I was at sea! The creatures came up out of nowhere and attacked me! What was not so amusing was that once I had won the battle, I was now stranded in the middle of the ocean, and the program no longer recognized that I had a boat under me. I could not move anywhere, as I was surrounded by water, and I couldn't board the now non-existent boat! My only recourse was to either sit there in hopes of having a pirate ship show up eventually, if not then my characters could slowly starve to death (which, by the way, works wonders on the sacrifice virtue, but is no fun!). Or to turn the computer off and lose everything that I had gained since my last game save!

This game was highly touted for having the ability to have complete conversations with the people in the towns. Conversation is one of the most important factors in this game. Without talking to EVERYONE, and of course knowing the right things to say or questions to ask, you will never be able to complete your quest. And keeping careful track of who says what, and where people are is a must! I have a whole notebook used solely for the purpose of cataloging people, clues and other bits and pieces of conversation.

This is definitely not a game for beginners! This is by far the most complex game I have ever played, and my all-time favorite to date. I highly recommend it to anyone who is interested in advanced adventure games, but anyone who didn't enjoy Ultima III should probably avoid it.

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FIRST XLENT WORD PROCESSOR DISK UPDATE

By Wally Wong, BRACE

The folks of XLEnt Software are now shipping the upgrade to their excellent and inexpensive First XLEnt Word Processor. Version 2.1 will make present owners happy and may excite those holding out.

Some of the modifications, as mentioned by Linda of XLEnt Software, will include the ability to save system configurations - you no longer have to adjust colors and make personal adjustments everytime you boot the system, dumping the cut/paste buffer directly to the printer and the ability to search and replace the return character - pay attention telecomm. people.

To obtain your upgrade, just send the yellow "upgrade" card you should have received with the manual. Lost the card? No sweat. Just send either the master disk with $3.00 or $5.00 without the master disk but list the serial number of the master disk in your response. Don't forget to include your return address and other necessary information when requesting your upgrade.

Look for an extensive review of this product as well as personal preferences by yours truly.

Wally

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(PHANTASIE - continued)

The solution in the meantime? Use the joystick instead of the keyboard (its easier that way anyway) -- and keep the baby away from the computer while playing! After they explained the problem, I followed my solution, and no more crashes.

I highly recommend this game to beginners, especially. If you prefer advanced fantasy games like the Ultimas, this game might seem simple, but is a refreshing alternative.

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SEE YOU AT THE MEETINGS!

REFRIGERATOR II

Software Instant 'Re-Booter' For Expanded Memory Computers

By Thomas Lawless, R-ATARI CLUB

For all XL and XE Computers with 256K or greater RAM.

(Editor's Note: This type-in Assembler program listing is a new and improved version of the REFRIGERATOR which was originally published in the April 1987 issue of PSAN. The program's purpose is to allow instant (versus the normal 10-15 second required delay) computer re-booting (i.e., a 'coldstart' - the same as switching the computer OFF, then ON) while retaining the contents of the extra RAM. Please refer to the April article for full details. The original REFRIGERATOR did not work with XE Computers.)

If you own an XE Atari and were disappointed that the original REFRIGERATOR program did not work for you. Take heart, this updated version will work on both XE's and XL's. I am not sure about the good 'ole 800', I don't have one to test this program out on. Anyone want to give it a try and let us all know?

The program is pretty much the same as the original except that we jump straight to the coldstart routine (line 650) instead of changing the status of the cartridge interlock memory location.

I wish to thank Tom Powers of S*P*A*C*E, for bringing this shortcoming to my attention and for giving me the incentive to make it work for us all.

Enjoy, and pass it around!
Thom

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(The following listing was created with the Atari Assembler/Editor cartridge.)

```
0100  .OPT NOLIST
0110 ; REFERIGERATOR is a resident
0120 ; program that is hidden from
0130 ; any running program. It is
0140 ; activated by pressing the
0150 ; 'HELP' key. It will then
0160 ; 'COLDSTART' the computer
0170 ; without erasing memory, such
0180 ; as a ramdisk. It operates
0190 ; similar to the FREEZER switch.
0200 ;
0210 ;
0220 HELP = 17 ; The number returned
0230 ; in $D209 when the 'HELP' is
0240 ; pressed. You can change this
0250 ; number to another if you
0260 ; chose.
0270 ;
0280 ;
0290 KBCODE = $D209 ;holds keyboard
0300 ;               code when read.
0310 VKEYBD = $0208 ;keyboard vector
0320 DOSVEC = $0C   ;reset vector
0330 ;
0340 ;
0350 ; Start of code throw away code
0360       *= $6000
0370 INIT1
0380    LDA DOSVEC
0390    LDX DOSVEC+1
0400    STA DOSAV+1
0410    STX DOSAV+2
0420    LDA VKEYBD
0430    LDX VKEYBD+1
0440    STA GETKEY+1
0450    STX GETKEY+2
0460    JSR ZIP
0470    RTS
0480 ;
0490 ;permenant code
0500 ;INTERPURT KEY CODE ANY TIME
0510      *= $0600  ;PAGE 6 AGAIN!!
0520 ASSEC
0530     PHA
0540     LDA KBCODE
0550     CMP #HELP
0560     BEQ ONE
0570     PLA
0580 ;
0590 ;
0600 GETKEY
0610    JMP $FFFF   ; self modifying!
0620 ;
0630 ;
0640 ONE
0650    JMP 58487   ; Coldstart entry
0690 ;
0700 ;
0710 REINIT
0720 DOSAV
0730    JSR $FFFF   ; self modifying!
0740 ZIP
0750    LDA #REINIT&$FF
0760    LDX #REINIT/$100
0770    STA DOSVEC
0780    STX DOSVEC+1
0790    SEI
0800    LDA #ASSEC&$FF
0810    LDX #ASSEC/$100
0820    STA VKEYBD
0830    STX VKEYBD+1
0840    CLI
0850    RTS
0860 ;
0870 ;
0880    *= $02E2
0890    .WORD INIT1
```

****

(Daisy-Dot - continued)

Daisy-Dot is available from GENIE and CompuServe via download. Additionally, Jim Chapman (the S*P*A*C*E Librarian) and other PSAN Librarians have copies, as do a number of modem users, like myself. So get a copy, check it out, and if you like it send Roy some money, like I already did. That's the best way we can encourage him to improve an already useful program.

****

A HACKER'S HARD DISK FOR THE ATARI ST

By Tom Love

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(703) 430-2853

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This article exists in draft form, as submitted for publication in the March '87 issue of "ST Applications" magazine. ST Applications has been published monthly since September 1985. It provides a nice mix of technical articles, programming projects, MIDI, news and rumors, and software reviews. Support disks are available. Subscriptions are $32.50/yr without the disk, $92.50/yr with the disk. Single issues are $4.50 each, $12.00 with the disk. The editor is William Petry. Their address is: ST Applications, P.O. Box 980, Forestville, CA, 95436 USA. Please mention my name and this article if you contact them.

1. Introduction

Back in the old days, when the "home computer" was only beginning to become a reality, the typical computer hobbyist was generally at least as adept at soldering patch wires onto his machine's circuit boards as he was at patching bugs in his code. Since those days personal computing systems have greatly matured, so that most users spend their time using commercial software or perhaps writing programs of their own - but rarely are they actually involved in any sort of hardware hacking.

This article describes the adventures of a relatively hardware-naive user (me) in attempting to assemble a usable hard disk system for an Atari 1040ST using essentially off-the-shelf hardware. The primary goal here is to provide the reader with the sort of documentation I could have used as I muddled through this project. Thus this is not a product review (though no doubt comments of a less than objective nature may sneak in at times); nor is this a "circuit cellar" sort of a project (I never had to use a soldering iron once!). Instead, this a project report, with an emphasis on "how-to" for those considering the same undertaking. But first, some background, to explain the rationale for this project.

The need for a hard disk on my 1040 became obvious very shortly after I brought the system home. I program industrial-strength Unix systems during the day, and am spoiled by the typically huge amounts of online storage available. While I have no doubt that serious software development is possible on floppy-based ST systems, it is not for me. However, the going price for a "turnkey" twenty megabyte hard disk system for the ST is still in excess of $600. This is not only expensive, but provides no reasonable option for upgrading disk storage capacity in the future. Luckily I learned of an alternative approach which solves both problems. This approach employs an industry standard hard disk, controller, and power supply, and a custom board which converts the ST hard disk interface to the interface standard understood by the controller. This custom adaptor board was developed and is sold by Berkeley Microsystems of Oakland, CA., hereafter referred to as "Berkeley".

Since I knew that I could borrow an unused hard disk and power supply from work, the cost of the system immediately became attractive - about $255 for the necessary interface hardware. And expandability with the Berkeley approach is better than with the Supra or Atari hard disks, as the adaptor/controller pair is capable of supporting two separate hard disks simultaneously. The clincher, for me, was the inclusion of a battery backed system clock on the adaptor board, providing the same capabilities as cartridge based clocks which sell for about $50. The only obstacle, as I was informed by Chris Rhodin of Berkeley: no documentation (though he says they will be shipping documentation with their board kits soon). This important consideration notwithstanding, I decided to go for it.

2. System Hardware

The package I received from Berkeley contained an Adaptek SCSI (Small Computer Systems Interface) disk controller board, the Berkeley DMA-to-SCSI adaptor board, four cables, and a microfloppy containing the installation and driver software. Just as promised, there wasn't a scrap of documentation in the box or on the disk. Berkeley left it to me to acquire my own hard disk and power supply. Fig. 1 diagrams the components of the system and how they interconnect logically.

The purpose of the SCSI controller board is twofold. It communicates with the disk drive itself, sending out commands to read and write data, and receiving the results of those commands; and it communicates with the outside world, receiving similar commands and sending back data and status. The controller effectively serves as a protocol converter between the industry standard SCSI protocol and the ST506/ST412 protocol understood by the disk drive.

In many computer systems the "outside world" which drives the disk controller is the system CPU and operating system, often communicating directly on the system bus. In the case of the Atari ST, however, no direct mechanism is provided to interface a disk controller to the CPU, so the CPU communicates with the hard disk by the only reasonably speedy interface provided, the DMA (Direct Memory Access) interface. This external 19 pin interface permits 8-bit parallel communication with the system data bus at rates up to 1 megabyte per second. The intermediary between the DMA interface and the SCSI controller is Berkeley Microsystems' SCSI adaptor board. This adaptor board is responsible for converting between the DMA protocol spoken by the Atari and the SCSI protocol understood by the disk controller.

The disk drive need meet only one requirement: it must be ST506/ST412 compatible. This covers just about all fixed

disks manufactured for personal computers since the early Eighties, including drives for the IBM PC/XT and PC/AT and compatibles. Capacities of available drives typically range from 10 megabytes to 86 megabytes; note however that constraints imposed by TOS limit usable capacity of a single drive to 64 megabytes. New 20 megabyte drives (e.g. the Seagate ST225) are typically available for somewhere around $280 without a controller (be sure you do not pay for a controller board, since most are for PCs and are useless to an Atari owner). Alternatively, good deals may be found in new and used hard drives at computer swap meets, in user group magazines, and by word of mouth. Expect to pay on the order of $10 per megabyte for used hardware. The disk I am using is a Quantum 540 which provides 34 megabytes of storage after formatting.

Acquisition of a power supply is a similar problem. New power supplies for PCs are available from discount houses for $50 to $75, depending on power output rating. Alternatively, scrounging might net you just what you need for twenty dollars or less. If buying a PC-type power supply, plan on buying one with a minimum of of 65 watts output for a single hard drive system or 135 watts for a double drive system. If you're scrounging, keep in mind that you need +5 volt and +12 volt output, with 3 to 5 amps each for a single drive system and 6 to 10 amps each for a double drive system. Different hard drives have different power requirements, so if possible consult the drive's technical reference manual for peak power draw. It is a good idea to put an AC line filter on the 110V input to the power supply, and a line switch on the input is highly recommended for turning the disk system on and off. The power is distributed to each of the boards and to each disk drive by means of four wires and a standard keyed AMP "Mate-N-Lok" connector, identical to that used by conventional floppy drives and available at any electronics supply house (AMP part number 1-408424-0). Most PC power supplies come with harnesses and connectors ready-made.

Finally, the cables. Berkeley can provide cables for a single drive system for a minimal cost. Their cable kit includes the 19 wire cable between the DMA port and their adaptor board; a short flat 50 wire ribbon cable to connect the Berkeley adaptor to the Adaptek controller; and two flat ribbon cables to connect the controller to the hard drive, a 20 wire data cable and a 34 wire control cable. If a second hard drive is used a third connector should be crimped onto the middle of the control cable, and second data cable is necessary. If you have access to facilities for manufacturing your own cables you might be well advised to, since the cables provided by Berkeley are painfully short. My installation uses the cables provided by Berkeley, though, so it is possible.

3. Hardware Assembly

Before beginning assembly we need to consider how this package is to be enclosed, if at all. Things to think about are RF emissions, heat dissipation, isolation from external disturbances, and general tidiness. The boards and drive do not seem to emit any noticable RF (radio frequency) noise, so unless you live in a neighborhood of ham radio fanatics you probably do not need to go to the trouble or expense of a metal enclosure. My setup seemed to run a little warm at first, but since my power supply happens to have a built-in fan I just rearranged things so that the power supply cools the other components. If necessary, a muffin fan can be added to the setup for about $10.

I opted for the "cheap-is-beautiful" approach, sandwiching the two boards between two 6" by 8" pieces of 1/4" plywood, holding the whole thing together with four 4" long #6 machine screws and spacing each layer by about 3/4 of an inch with nuts and small pieces of non-conductive plastic tubing. The hard drive sits on top of the whole sandwich. Crude but simple. It is also possible to screw the boards directly to the bottom of the hard drive, or use commercially available mounting rails.

My assembly method was largely dictated by the short cables provided by Berkeley. After playing with the connectors it became apparent that there was only one way things would fit together. Figure 2 *(See Editor's note at end of article)* graphically illustrates this connectivity; the following paragraphs provide a more detailed explanation.

Begin with the assumption that the circuitry attached to your hard drive is on the bottom. The disk controller board goes directly underneath the hard drive, with the components facing down and the 50 pin header (the two rows of pins sticking straight out from the board) and LED toward the front. Under the controller goes the Berkeley adaptor board, with its components also facing down and its 50 pin header toward the front. The 19 wire DMA cable connects to the header on the back side of the Berkeley adaptor board, with the cable directed away from the board. Next the 50 wire ribbon cable connects the 50 pin headers on the front of both boards. Proper orientation is important. This is achieved by plugging the cable into the Adaptek so it that it extends away from the board (toward the front), then bending it down and flipping the connector around so that it meets the Berkeley adaptor board's header.

Next, the disk drive is connected to the controller by the 20 wire data cable and the 34 wire control cable. These cables attach to the disk drive by means of edge connectors; on the disk controller the control cable attaches with an edge connector while the data cable(s) attach to the header(s) at the rear of the board. The header near the side of the board is used for drive zero (the designation for the drive in a single-drive system, or the first drive in a two-drive system); the header in the middle of the back of the controller is used for drive one in a two-drive system. The control cable attaches directly without any twists. The data cable is attached to the disk with the cable directed downward, and is turned under to fasten to the appropriate header on the bottom of the controller. Note that none of the ribbon cables used require any twists in them.

One further consideration: hard drives typically have a jumper on the bottom labelled "DS". This is the "drive select" jumper which provides each disk with an identity, whether drive zero, drive one, or greater. On a single drive system the DS jumper should be set to 0; on a double drive system one disk should be set to DS0 and the other to DS1. Finally, power connectors need to be supplied to each of the boards and the disk drive. The standard connector keying makes this straightforward. Now comes the test of nerve: plug it into the wall and turn it on (for safety's sake while disconnected from the ST's DMA port). If everything was put together properly the LEDs on the disk controller and drive will begin blinking and you will hear the unmistakeable sound of the hard drive beginning to spin and coming up to speed. If these things do not happen all I can suggest is re-reading everything above and trying again before calling Berkeley.

4. Software Installation and Configuration

In order to make the disk usable to the ST it must be properly installed and formatted. Begin this procedure by turning everything off, connecting the DMA cable to the back of the ST, turning on the hard drive, and then after it is

spun up turning on the ST. Insert the floppy supplied by Berkeley into drive A and open it up. The AUTO folder on the Berkeley disk contains two programs, install.prg and setclk.prg. These should both copied into the AUTO folder on your boot floppy. Install.prg handles boot-time installation of the hard disk, and setclk.prg automatically notifies GEM of the date and time stored in the clock on the adaptor board. The battery-backed clock needs to be set once at installation time. This is done by setting the date and time correctly in the GEM Control Panel and then running the program initclk.prg in the root directory of the Berkeley floppy. This program only need be run again when the hardware clock needs to be reset, for example when changing to daylight savings time, leap year, or if the battery wears out.

Next open up the AHDI folder on the diskette. This contains two programs of interest, hdx.prg and ship.prg, and an important data file called wincap. Hdx is the hard disk installer program, and ship is used for parking the disk's heads before transportation. The wincap file needs to be examined to ensure that it contains data relevant to your brand and model of disk drive, including the name, the number of heads, the number of cylinders, write precompensation, reduced write current, default partition, and other obscure things. Wincap entries for a number of the more standard drives are already in place. If your drive is not one of the ones already installed you will need to refer to a technical reference manual for your drive, Chris at Berkeley Microsystems, or both in order to get a usable entry. A text editor such as micro-emacs is necessary to modify the wincap file.

Next run the program hdx.prg. This is a GEM application which is used to format, partition, zero, and mark bad blocks on the disk. Each operation is available under the "DISK" pulldown menu. The format operation should be performed first, so pull down and activate "format". You must verify that you want to format, then select the physical unit. This will be drive 0. Next you must pick the drive type from a menu which is generated based on the wincap file. Finally, you must verify one more time that you want to format (an operation which destroys all data on the disk), and formatting will begin.

The next step is to partition. Again you must verify that you wish to partition and name the physical unit, then you are presented with a panel of logical unit names (C: through P:) with sizes associated with each partition. A partition, or logical unit, may be no larger than 16 megabytes. You may divide up your disk as you like; mine is cut into 14, 10, and 10 megabytes for C: through E: respectively. If you have a favorite ramdisk which is hardcoded to be device C: (or something else) you may wish to partition around it.

Next each partition must be zeroed. Invoke the "zero" step once for each partition, specifying which partition each time. And last invoke the "markbad" step once for each partition. This scans through each partition identifying and mapping out unreliable blocks; it takes longer than any of the other steps. When all this is done, exit hdx by pulling down the FILE menu and activating "quit".

The last step is to establish an icon for each partition by selecting an existing disk icon and choosing "install disk drive" from the OPTIONS menu, filling out the drive identifier and icon label fields, and clicking on "install". This should be done once for each partition built in the hdx partition step. When this is done, save your desktop to your boot floppy and try powering everything down and cold booting. If the installation went properly, your desktop will show an icon for each partition. Select each icon one at a time and "show info" to verify that the correct amount of bytes available is displayed. If all this appears right, consider yourself the owner of a hard disk system.

5. Use

Use of a hard disk in the TOS environment is not much different than use of floppy disks, except of course that the hard disk is much bigger, faster, and does not require any of that obnoxious disk swapping. At this time a boot floppy containing your AUTO folder, desktop.inf, and any desired desk accessories is still necessary; both Atari and Berkeley Microsystems are working on reliable methods for booting directly from the hard disk.

When turning on your system you should turn on your power supply first, powering up the boards and disk. Turn on the monitor while waiting for the the disk to spin up. After about five or ten seconds, when the disk is spun up and its LED stops blinking, then turn on the ST. In powering down, reverse the order: ST off first, disk last. Note that cycling power on the disk while the system is up causes a system reset.

Installing a hard disk may solve many problems, but it invariably introduces one rather unpleasant one: backing up your files. I am unaware of any reasonably priced tape backup mechanism currently or soon available for the ST. This leaves the floppy as the only viable medium. There are a variety of commercial and public domain packages available to make the procedure easier and faster than simply copying.

One issue which has not been received much press but is very important to all ST users is what has come to be known as the "forty folder limit". Due to a bug in GEMDOS's limited resource manager, the TOS file system can get a case of amnesia if more than forty folders exist on the set of installed partitions (including the floppy). The problem does not occur every time, but if it does, the loss of information on your hard disk may be total. Therefore until a fix is published by Atari you should keep a close watch on the number of folders you create on your filesystem.

6. Evaluation, Conclusions, and Recommendations

If you have read through all of the above installation instructions you may have come to the conclusion that all this is a lot of trouble; if so, you're not far wrong.

However, for some people this "hacker's" hard disk makes more sense than the expensive turnkey systems. These people would be those with inexpensive access to any of the components of the system; those with limited budgets who want to start out small (say with a cheap 10 meg disk) and later expand; those with very large storage needs such as BBS sysops, programmers, and businesses; and those who just like to tinker with hardware.

I would specifically not recommend this system to those meek people who are obsessed with warranties or have a deathly fear of electricity.

My system has operated reliably since I put it on line several weeks ago. While I cannot provide any quantitative data as to performance or contrast my system with an Atari or Supra hard disk, loading software is significantly, perhaps five to eight times, faster than loading from floppy.

(Continued at bottom of next page)

POWER!

Build A Stronger Power Supply For Your 800XL.

By Unknown Author

(Reprinted from the January 1986 issue of STATUS via ACE)

If you've ever had a power supply go bad (as mine did), you know how long it can take to get a replacement. A few phone calls to local vendors reveals a one week wait at the minimum. Undaunted (and impatient), I decided to build my own power supply.

By using the circuit diagram (see Figure 1) and following the construction notes which follow, you can have a "beefy" power supply which will handle any demand the 800XL can place on it. And yes, it will indeed power a RamDisk modification. As an added feature, I've included surge protection with the power supply.

The heart of this power supply is a LM323K +5 volt regulator IC. With the proper heat sink, the regulator can provide up to 3 amps to your computer. The 800XL requires less than 1.5 amps (the 130XE less than 2 amps), so with a 3 amp rating this regulator is ideal for the power supply.

For connecting to your computer, you may purchase a 7-pin "DIN" connector or you may cut the cable from your old supply. If you look at the diagram (see Figure 3), you'll see pins 1,4, and 6 are the +5 volt output. Pins 3, 5 and 7 are the ground connections. With an Ohmmeter, find the wire which you cut connecting to pins 1, 4, and 6 and tag it with "+5" for future use. The other wire is the ground and it connects to pins 3, 5 and 7.

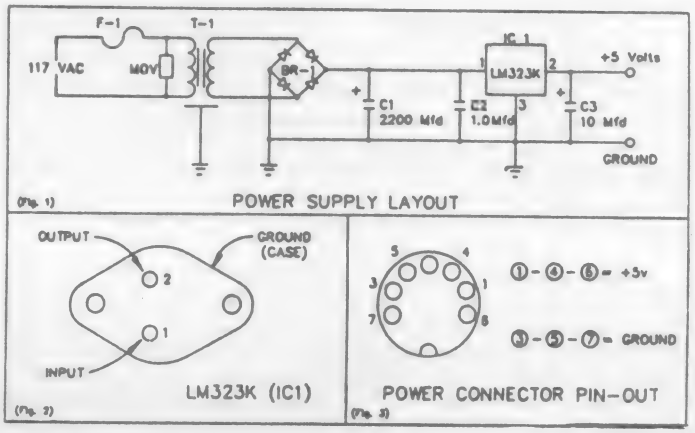
Follow the schematic (see Figure 1) and wire your project carefully. Observe the polarity of the electrolytic capacitors and study the pin-out configuration of the LM323K (see Figure 2) before making the connections.

Connect the Metal Oxide Varistor (as shown in the diagram) for surge protection. Connect the black and white wires of the line cord to the input of the transformer. A fuse holder should be wired to one of the inputs of the transformer. The green wire (if you are using a three wire cord) should be connected to the metal case of the transformer.

One final construction note. The LM323K must be mounted on a heat sink. I chose a plastic project case with a metal top (see Parts List) and mounted the LM323K to the metal top with heat sink compound. As an option, you can mount the regulator on a heat sink designed for a "TO-3" transistor case. I also recommend a TO-3 socket for the regulator for easy installation and removal.

Before connecting the power supply to your computer, power up your unit and check for +5 volts at the output. If all seems well than try your computer. If you notice any "ripple" on the screen, then recheck all your solder connections. It may be necessary to connect the case of the 12 volt transformer to ground. In extreme cases, you may have to shield the entire tranformer with a piece of metal connected to ground.

Good luck with your project!



POWER SUPPLY PARTS LIST

T1 - 12 volt transformer (Radio Shack 273-1352 or equivalent)
BR1 - Bridge rectifier (RS 276-1146 or equiv.)
IC1 - LM323K (available at local electronics suppliers)
C1 - 2200 mfd electrolytic capacitor (RS 272-1020 or equiv.)
C2 - 1.0 mfd capacitor (RS 272-1050 or equiv.)
C3 - 10 mfd electrolytic capacitor (RS 272-1013 or equiv.)
MOV - metal Oxide Varistor (RS 276-571 or equiv.)
Misc. - Project enclosure (RS 270-232 or equiv.)
Fuse holder.

****

(A Hacker's Hard Disk for the Atari ST - continued)

Overall it has greatly improved the utility of my system and at an exceptionally low cost.

Postscript: The address for Berkeley Microsystems is: 1107 El Centro Ave., Oakland, CA USA 94602, phone (415) 530-3436.

The price for the two-board set is still $250 but will be going up, so contact Berkeley Microsystems to verify price information before ordering. Berkeley will be shipping an installation manual with their boards soon.

Editor's Note: The apparent accompanying figures (probably a component list and a cabling diagram) were not submitted with this article. We'll publish them at a later date, when and if we get them.

****

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SERVICING THE XL/XE POWER SUPPLY

By D.F. NEFF, MACE

(Reprinted from the MACE Journal, Feb '87)

This article is a step-by-step trouble shooting guide and parts list to permit you to repair your own computer power supply. It is written for the Atari enthusiast who is not well-versed in the electronics field, but has some interest in learning more. It assumes you are familiar with soldering techniques and the use of a VOM. Those of you who are hestitant to repair anything yourself should remember two things:

1.) It's already broken, you can't make it worse.

2.) Nothing in the power supply costs over $10.00 to replace. In fact, the parts most likely to fail cost less than $1.00!

Now let's get started. First, we'll consider the obvious questions. Is the power supply plugged in? Is the wall outlet working? Plug a table lamp into the wall outlet to test it. If you are using an extension cord between the wall outlet and the power supply, plug the light into the extension cord to test it too. If the outlet and the extension cord pass the test, we can turn our attention to the power supply.

Plug the power supply back into the wall outlet and remove the power supply plug from the keyboard console. This Plug will contain seven pins as shown in Figure 1. The pins are connected in two groups of three with no connection to the middle pin. Using your voltmeter, check for the presence of 5 to 7 volts d.c. between the three pins on the left and three on the right. *(Editor's Note: Don't allow the two test leads to touch each other, or you will cause a short which could cause further damage.)*

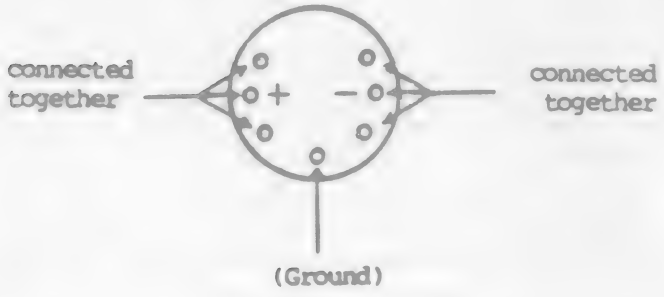


Figure 1

If this plug has the proper voltage and polarity then your power supply is working and your problem is located inside the keyboard console. If, however, you do not have the proper readings at this plug then you must do further testing inside the power supply.

Turn the power supply upside down, gently pull out the four rubber feet and unscrew the Phillips-head screw under each foot. Turn the power supply back upright and remove the top half of the case to expose the circuit board and components. *(Ed.'s Note: At this point if you see that the power supply is a solid block of epoxy plastic you won't be able to repair it. See articles on how to build a power supply.)*

Remove the fuse and test it with your ohmmeter. If the fuse is O.K. reinstall it and proceed with the test program. If the fuse is blown and the replacement also blows, go to the test description for CR101-4.

The cord to the keyboard is attached to the end of the circuit board at points labeled GND and +5V. With the power supply plugged into the wall outlet, use your voltmeter to test for 5.0 to 7.0 volts d.c. across these two points. If the proper voltage and polarity are present between these points, then your console cord and plug are defective and must be replaced. When you have replaced the plug and cord, use your voltmeter to check for proper polarity, as shown in Figure 1, before hooking up the keyboard console again.

If no voltage was present at those two points we must go to the opposite end of the circuit board and test the transformer. The two secondary leads from the transformer attach to the circuit board near the fuse we tested earlier. set your voltmeter for a.c. and check for 10 to 15 volts a.c. between these two leads. If no voltage is found here we must check the primary side of the transformer.

Notice: This next step requires working with dangerous voltages! If you are not experienced in handling 110 v.a.c., stop here and take your power supply to a repair shop. If you wish to proceed with this test, unscrew the two wire nuts attaching the power cord to the primary side of the transformer. Use your voltmeter to test for 110 v.a.c. across the two bare connections. If there is no 110 v.a.c. at this point, the power cord and plug are defective and must be replaced. If you find 110 v.a.c. at this point, then the transformer is defective and must be replaced. The transformer listed in Table 1 is not a direct replacement and may present a slight fitting problem when you reassemble the power supply case.

If, when you checked the secondary wired near the fuse, you found the 10-15 v.a.c. to be present you should skip the 110 v.a.c. test. Instead locate (IC) U102 which is attached to the black finned heat sink. It will look like Figure 2.

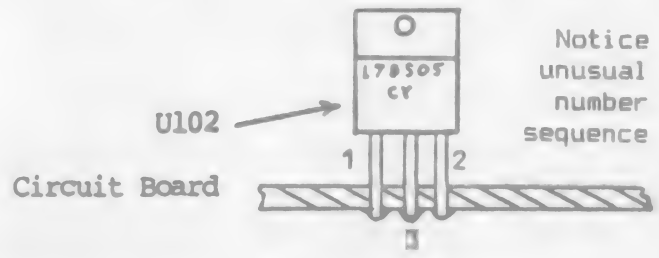


Figure 2

Remember when we first opened the case and checked the attachment points for the keyboard console cord and plug? Those two points are labeled GND and +5V and are located on the circuit board where the two wires enter the case. Attach your voltmeter's black or negative wire to the point labeled GND and leave it there while we test U102. Set your meter for d.c. again and touch the red or positive lead of your meter on each of the three legs of U102 one at a time. Be careful not to short two legs together while doing this test.

Pin 3, the center pin should have about 1/4 volt (0.25 volt) on it. If it is lower than 1/4 volt it's o.k., but if it is higher than 0.5 volt (1/2 volt), R102 may be defective. R102 is a 2.9 ohm resistor but can be replaced with three parallel 10 ohm resistors.

Pin 1, should have 11 to 16 volts on it, and pin 2 should have 5.5 to 7 volts on it. If pin 1 and 3 voltages are normal, but pin 2 voltage reads wrong, then U102 is defective and must be replaced.

If the voltage at pin 2 is too low, the problem is in the voltage rectifier diodes CR101-4.

Unplug the power cord from the 110 v.a.c. wall socket and allow the power supply to sit idle for at least two minutes to allow C104 to discharge before proceeding. Set your meter to read resistance.

Check the resistance of diode CR101 and write it down. Reverse the meter leads (use the red where you just used the black and vice versa) and write down the new resistance reading. The value of these readings is not critical, but one must be at least twice as large as the other.

Repeat the same procedure for diodes CR102, CR103, and CR104. If any one of these fails this test, replace all four of them. The failure of one diode places excessive loads on the others and may lead to their failure later. Before removing a diode for replacement note the orientation of the silver paint band on one end of the body. The replacement diode must be installed the same way. If you get mixed up, refer to the diagram on the circuit board and refer to Figure 3.

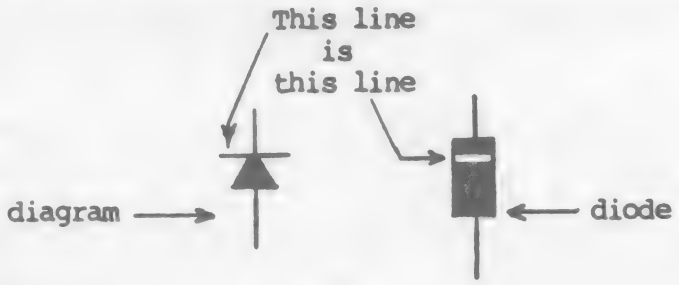


Figure 3

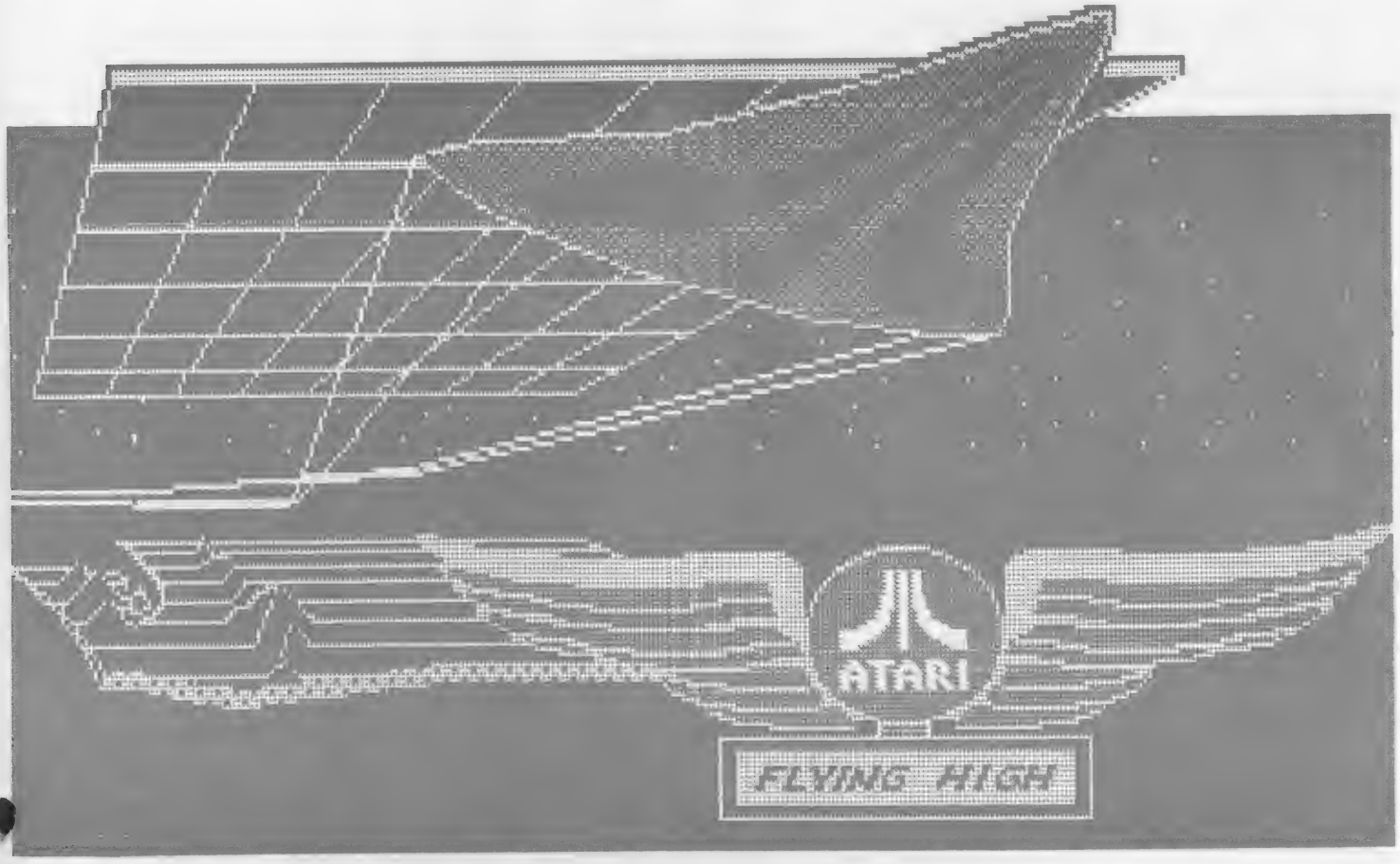
Now look at the other components on the board. If any of them are damaged or appear burned, replace them. At this point your power supply should be working as good as new. Use a small brush to remove any dust in the case, and reinstall the cover.

Table 1

PART DESCRIPTION		RADIO SHACK STOCK #
Voltage Regulator	U102	276-1770
2.9 ohm Resistor	R102	271-1301*
Power Transformer		273-1511
Console Power Plug		274-003**
Rectifier Diodes	CR101-4	276-1143
Fuse		270-1246
Power Cords		278-1255

* (use 3 of these connected in parallel)
** (not a 7-pin plug but it will work well)

****



HELP YOUR CLUB!! WRITE AN ARTICLE
BRING IN A NEW MEMBER!

"CONVERT" M.L. ROUTINE

For 8-Bit BASIC Programmers

By Jim Chapman, S*P*A*C*E

CONVERT is a simple, but very useful machine language (M.L.) subroutine which I regularily insert into my own BASIC programs to convert screen displays and text strings into inverse video and vice versa. This is particularily effective for highlighting selected menu options which are displayed on the screen. A string of bytes of up to 255 characters can be "toggled" instantly - much, much faster than is possible using BASIC commands.

Type-in and RUN Listing 1 to see CONVERT in action. After you've RUN the program one time (and thus have created CONVERT$), you can simplify the program (and speed program initialization) by making the following changes:

1. Clear the screen.
2. Type: "? CONVERT$" and (RETURN).
3. Cursor up to the left end of the displayed characters and move them over to the right by typing (CONTROL) and (INSERT) 13 times.
4. Type: "40 CONVERT$=";(DOUBLE QUOTE) and (RETURN). This will create a new line 40 which sets up CONVERT$ (the CONVERT M.L. Routine) with the proper values. You can check yourself by LISTing line 40 and then printing C$ to the screen. If they contain the same string characters, then everything is OK.
5. Delete lines 35, 45, and all DATA lines (100-135).
6. SAVE the program. If you just want the CONVERT routine (to insert into future programs) then delete all lines except 30, 40, 80, and desired REMark lines. Save using the LIST command so that you will be able to merge it into the program of choice.

Instead of CONVERTing a string and then PRINTing it to the screen as I did in lines 80-85 of Listing 1, you can also directly toggle screen memory by defining the 2nd parameter of the M.L. call (line 80) as:

PEEK(88)+256*PEEK(89)+OFFSET

OFFSET is the number of bytes from the start of screen memory that you will begin CONVERTing from. Also, the number of bytes to CONVERT (the third parameter of the M.L. call in line 80) would now be directly specified, rather than defined as the LEN(TEXT$). Repeating the M.L. call (line 80) without changing parameters will instantly return the specified bytes of screen memory back to the previous state.

Listing 2 is the Assembler source code of CONVERT - for those who are interested in M.L. programming.

****

LISTING 1, Sample BASIC Program.

```
5 REM "Normal-Inverse or Inverse-Normal Text Converter", by
Jim Chapman 5/86
10 REM TEXT=memory location of the text to be converted; and
BYTES=the number of characters to be changed.
15 REM
20 REM * SETUP *
25 REM
30 DIM CONVERT$(25),TEXT$(40)
35 FOR X=1 TO 25
40 READ A:CONVERT$(X,X)=CHR$(A):REM Creating CONVERT routine
45 NEXT X
50 REM
55 REM * SAMPLE USE *
60 REM
65 TEXT$="THIS IS A CONVERTED TEXT STRING."
70 ? CHR$(125):? :? :?
75 FOR X=1 TO 7
80 A=USR(ADR(CONVERT$),ADR(TEXT$),LEN(TEXT$))
85 ? :? TEXT$
90 NEXT X
95 END
100 REM
105 REM
110 DATA 104,104,133,204,104
115 DATA 133,203,104,104,133
120 DATA 205,160,0,177,203
125 DATA 73,128,145,203,200
130 DATA 196,205,208,245,96
135 DATA -1
```

LISTING 2, M.L., Source Code

```
01000 ****************************
01010 * STRING INVERSE/NORMAL  *
01020 * CONVERSION ROUTINE     *
01030 * (Max length = 255)     *
01040 ****************************
01050 STRING   .EQ $CB
01060 LENGTH   .EQ $CD
01070 ****************************
01080          PLA
01090          PLA
01100          STA STRING+1
01110          PLA
01120          STA STRING
01130          PLA
01140          PLA
01150          STA LENGTH
01160          LDY #$00
01170 CONVERT  LDA (STRING),Y
01180          EOR #$80
01190          STA (STRING),Y
01200          INY
01210          CPY LENGTH
01220          BNE CONVERT
01230 DONE     RTS
```

850 INTERFACE PORT TESTING

By BUZZ KELLEY, MACC

(Reprinted from Nybbles & Bytes, July 1987)

Determining if the 850 is fully functional is not as easy as plugging in a modem or a printer and seeing if these devices work. Here we need a connector made from an old joystick, or a plug (a DB9 male) obtained locally from Radio Shack, or someone's parts bin.

Connect pins 3 & 4 (according to the diagram) with some wire by soldering or wire wrap methods.

You need to load and run the RS-232C handler as found commonly on Atari DOS 2.0, 2.5, SpartaDos, or TOPDOS diskettes.

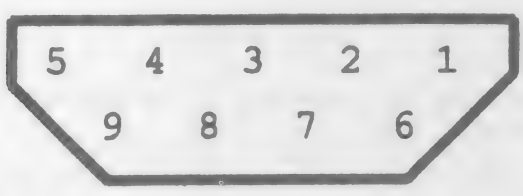
Run the following program to perform the test.

```
100 DIM SEND$(255): REM String to send to tested port
110 DIM RECV$(255):REM String to get from tested port
120 DIM R$(1), PRT$(10): REM Port number to test
130 PRINT CHR$(125): REM Clear screen
140 PRINT:PRINT:PRINT "BAUD RATE":INPUT PBS:REM Set according
    to BPS Selection Table
150 PRINT:PRINT "R: PORT NUMBER TO TEST ";:INPUT R$:
    REM R:Port Number - Use 1,2,3, or 4
160 PRT$=CHR$(34);"R" :PRT$(LEN(PRT$)+1)=R$:
    PRT$(LEN(PRT$)+1)=":";CHR$(34)
170 XIO 36,#2,BPS,0,PRT$:REM Configures 850 for our use
180 OPEN #2,13,0,PRT$: REM Opens 850 Port that we'll be using
190 XIO 40,#2,0,0,PRT$:REM Closes 850 Configuration Mode
200 PRINT:PRINT "ENTER TEST DATA TO SEND: ";:INPUT SEND$
210 PRINT #2;SEND$:REM Sends data string to port for testing
220 INPUT #2;RECV$:REM Gets data string back from the port
230 PRINT:PRINT RECV$:REM Shows you what came back
240 IF RECV$() THEN PRINT:PRINT "ERROR CONDITION ON PORT #";
    R$;"GOTO 260
250 IF RECV$=SEND$ THEN PRINT:
    PRINT "PORT UNDER TEST PASSES THIS TEST"
260 CLOSE #2:END:REM Type (RUN) to do again
```

BPS SELECTION TABLE

*PBS	TRANSMISSION RATE	*PBS	TRANSMISSION RATE
(* Use PBS to set BAUD RATE in line 140 of test program)			
0	300 Bits Per Second	8	300 Bits Per Second
1	45.5 BPS	9	600 BPS
2	50 BPS	10	1200 BPS
3	56.875 BPS	11	1800 BPS
4	75 BPS	12	2400 BPS
5	110 BPS	13	4800 BPS
6	134.5 BPS	14	9600 BPS
7	150 BPS	15	9600 BPS

Diagram of the R: socket as you see it on the 850 Interface.



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USING THE TURBO BASIC COMPILER

BY Don Lebow [70717,720]

(Reprinted from ZMAG #61, July 10th, 1987)

The Turbo Basic Compiler can be used to compile programs in both Turbo Basic and regular Atari Basic. Doing so will yield a sometimes startling (and sometimes not so startling) increase in speed. Like Turbo Basic itself, the compiler (and compiled programs) can only be run on an XL/XE. Also like TB, it is NOT compatible with Spartados.

REQUIRED!

You need two files to use the compiler. Both are in the Utilities section of CompuServes' Atari8 SIG or on your local BBS system. COMPIL.OBJ is the actual compiler (and a BIG thanks to Warren Lieuallen for the translation job!!!). RNTIME.OBJ is the companion 'runtime' package. *(Ed., PSAN users groups also have complete Turbo Basic disks in their libraries. On these disks, the two files are named: COMPILER.COM and RUNTIME.COM, respectively.)*

COMPILING PROGRAMS

Load COMPIL.OBJ from the DOS menu, with an (L) binary load command. On the first screen, type the number of the drive containing your target program. (I usually have that on D8: for speed.) You'll then see a directory of the files on that disk. Use your cursor keys to highlight the 'target' file, then hit RETURN. As the compilation proceeds, you'll see the line numbers at the top of the screen. If no errors occur (see below), the program will then ask you for a filename for the new compiled program. An extender of .CTB (for Compiled Turbo Basic) is mandatory (see AUTORUN.CTB, below), as is a SAVE to D1:. Put the disk that'll hold your program in D1; type the name; then hit RETURN. That's all there is to it!

COMPILE ERRORS

Like most Atari compilers, this one can be fussy. It will NOT compile an END statement (odd, huh?) Use STOP instead. It will also balk at compiling a FOR that has more than one NEXT attached, like so:

```
10 FOR X=1 TO 12:GET #1,BYTE
20 IF BYTE<32 THEN NEXT X
30 ? CHR$(BYTE)
40 NEXT X
```

If you get an error message, you'll need to go back to your original Basic program and try to fix the offending code. In the above example, you would change line 20 to:

```
20 IF BYTE<32 THEN 40
```

RUNNING PROGRAMS

Your new .CTB program is (NOT) true machine language; it's 'pseudo code'. THAT means you must have a 'runtime' program to handle the final translation. This is RNTIME.OBJ. Compiled programs won't run without it. You can use it in either of 2 ways:

FROM DOS: Use the (L) command to LOAD RNTIME.OBJ.

FROM DISK: Copy RNTIME.OBJ to a disk containing DOS files and rename it AUTORUN.SYS, which allows it to boot automatically.

(Continued at bottom of page 21)

An Open Letter To CONSUMER REPORTS MAGAZINE

Opinion by Randy Lewis, S*P*A*C*E

When, in the name of consumerism, are you going to evaluate computers with a fraction of the detail you devote to disposable diapers?

I know there are some staunch Consumer Reports defenders amongst Atari computer users. I have read the defenses of your words when other computer users have dared to suggest you might have made a mistake. I will press on nonetheless because I feel there is a point to be made.

By way of justification for these comments, I have been a subscriber to Consumer Reports since before there was an Atari. I trust that you try as mightily as any journalist to be objective. Your biases do come through, and I have always smiled at your repeated pronouncements that you are objective. No human can be so pure, but I believe you try as hard as you can.

My first complaint with your computer coverage was that it began so late. Your first series on home computers appeared years after the first home computers. You seem mystified by this new gadget and unsure of how to evaluate it.

When you did get around to evaluating computers, you relegated the Atari to the category of "a little something for the kids." I accepted that slight without comment. Later, you were wise enough to review the Atari and Commodore models as entities unto themselves and not by how the compared to the IBM-PC. I was pleased that you concluded, as I had some months earlier, that the Atari computer with AtariWriter was a great home computer value.

As the home computer slump began, your coverage of computers slumped too. With the announcement of the Atari ST and Commodore Amiga, you told us how you had bought each computer but couldn't find any software for them. As months went by, I kept waiting for you to discover the scores of programs that were even then available for the ST. But you didn't.

It was some months later that you finally gave a tiny review to the ST and Amiga. You did find much to praise about these new models and "leaned slightly" to the Atari.

That's been it. Except for a review of computer printers, you have apparently concluded that social issues are now "in" among your readers, and that such things as computers are passe.

But now you've gone too far. In the August issue we are treated to your review- in more detail than the ST or Amiga- of the Magnavox Videowriter. A fine product in its own right, your coverage of this highly specialized product proves that you have not been ignoring computers because they appeal to a specialized audience.

But your recommendations are astounding. A magazine that loves to boost high quality-low cost products recommends that its readers spend $1200 on an IBM-PC clone and extras as an alternative to the Videowriter.

Good grief! For the price of the Videowriter ($800 list), you could easily buy an Atari 520ST, a printer of better quality, and several software programs. For the $1200 you recommend as an alternate package, you can by a color 1040ST, software and high quality printer. You could even by an Amiga (sort of).

To add insult to injury, the same issue contains a software survey. But only for those poor shmoes who have IBM and compatibles. I assume this means we will soon be treated to a review of software for IBM. I hope you will at least mention that many of the programs in your list are also available for the Atari and Amiga.

I continue to live in hope that the nation's top consumer product review magazine will come to its senses and realize that there is computer life beyond IBM and Apple and that many of us consumers choose not to spend for those "famous maker" names and have found superior machines at far lower prices. Our accompliishment is one that should make you proud.

****

RUNNING ATARIWRITER PLUS WITH SPARTADOS ON AN 800XL

By Milt Ingram, Portland Atari Club

(From the Portland Atari Club Newsletter, July/August 1987)

AtariWriter Plus is great, BUT...

Every time I use it I have unkind thoughts about the people at Atari who seem to be determined to prevent me from using some of the features I like best about my 800XL. These include a 256K expanded memory and U.S. Doubler equipped 1050 drives used with the SpartaDos operating system. I could have a 128K ramdisk to allow rapid switching between several files. I could use double density for added file capacity and time/date stamping of files, using the R-TIME 8 cartridge or the SpartaDos Clock.

Unfortunately, none of this seemed possible because of the way AtariWriter Plus was supplied on a copy protected "boot" disk. Then, along came the article by Carolyn Hoglin in the July ANTIC magazine, explaining how she adapted the program to run with TOPDOS. I determined that I would do the same for SpartaDos and include the ramdisk and time and date stamped files. I chose not to alter the original AtariWriter Plus disk, but came up with a method which uses a batch file to perform the entire boot operation. A disk swap is necessary, but everything else is automatic.

Here's how it can be done. First, initialize a SpartaDos disk using X32D.DOS (SpartaDos version 3.2), and copy the SpartaDos files RD.COM and TDLINE.COM to it. Then, onto this same disk copy the AUTORUN.SYS file from the AtariWriter Plus disk and rename it WRITE.COM. Finally, create the folowing STARTUP.BAT (batch) file:

```
TDLINE
RD D3: /E
COPY WRITE.COM D3:
;
;REMOVE BOOT DISK AND INSERT
;ATARIWRITER+ DISK IN DRIVE 1
;
PAUSE
TD OFF
BASIC OFF
D3:WRITE
```

When this disk is booted it performs the following operations:

TDLINE - sets a time and date clock from the R-TIME 8 cartridge. If you don't have the R-TIME 8 cartridge, use the

(Continued on next page)

TIME and DATE commands to initialize the clock and calendar.

RD D3: /E - sets up and formats a ramdisk in the top 128K of memory. Note that this leaves 128K available to run the 130XE version of AtariWriter Plus.

COPY WRITE.COM D3: - copies the program WRITE.COM (the autorun.sys loader program from the AtariWriter Plus disk) to the ramdisk (D3:).

The next two lines are a prompt to replace the boot disk with the AtariWriter Plus disk. PAUSE - prints a prompt to "PRESS ANY KEY TO CONTINUE" after swapping disks.

TD OFF - turns off the screen display of time and date, but leaves the internal clock active to time/date stamp disk files.

BASIC OFF - turns off BASIC. Don't have to hold down OPTION key during boot.

D3:WRITE - loads and runs the loader program from ramdisk. It then loads AtariWriter Plus from Drive 1.

PLOAD and SAVE will now work with either single density or double density disks. Double density disks will need to be formatted ahead of time.

The built-in FORMAT command works from the DUP.SYS file on the disk and produces only DOS 2 format. (This will still work, as SpartaDos can read most Atari formats. You just lose the extra capacity.) Also, the INDEX command will show the disk directory in DOS 2 format, without the time and date.

****

(Using The Turbo BASIC Compiler - continued)

AUTORUN.CTB

RNTIME has an 'autorun' feature. When it runs, it will look for 'AUTORUN.CTB' on D1. If found, this file will automatically load and run. If NOT found, an error message will be displayed (FEHLER 9), along with a short menu. [Dos Run (again) Load]. At this prompt, press L, then type in the name of your compiled program.

So, to construct a complete 'boot' disk, you should have on the same disk:

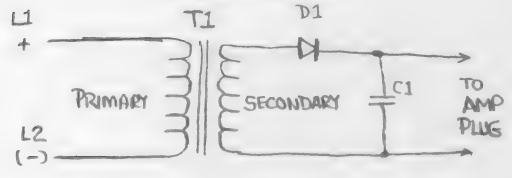
Dos files (DOS.SYS, DUP.SYS)
AUTORUN.SYS (RNTIME.OBJ)
AUTORUN.CTB (compiled program)

Hint: here's the TB '1 liner' that I use (compiled) as AUTORUN.CTB on my 'compiled programs' disk.:

```
10 CLS:DIR "D1:*.CTB":STOP
```

****

Figure 1



EASY TO BUILD

PHONE AMPLIFIER MONITOR

By Kit Carson, S*P*A*C*E

Here is a useful project that was given to me by a stranger I met at a Radio Shack store. It's origin is lost in the mists of time.

The main component of this amplifier is a doorbell transformer which should be readily available at any hardware store. When I purchased mine I had two choices as to the output voltage ratings. I chose the one suggested which was 10V, 5W.

Let me define a few terms before I go on. The input or primary side of the doorbell transformer will be the side marked 110V. The output or secondary will be marked 10V, 5W or something similar. L1 and L2 are screw terminals inside most phones. L1 is positive (+) and L2 is negative (-). There is normally 5V d.c. between L1 & L2.

Most circuits I have seen ask you to build an amplifier. This one is easier. The output of the transformer (load side), can be connected to any amplifier that has a microphone input. It doesn't seem to matter which wire goes to which on the amplifier plug.

I had an old portable tape recorder that I was able to take the little amplifier board out of and use. If you use a good recorder, you will need to act as if you are recording in order to hear anything. You can use a tape recorder that has a monitor switch for the speaker or you can listen to the sound through the earphone jack. Also there are home stereo amplifiers and recorders that can be used. An individual should be able to find an appropriate amplifier inexpensively and without great difficulty.

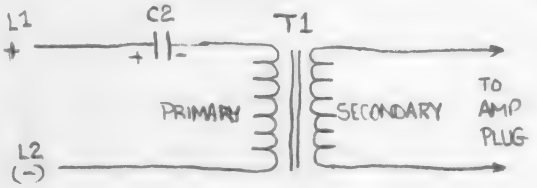
The original diagram (shown in Figure 1), called for a diode such as Radio Shack 276-1141. The diode goes on the 10V side (secondary) of the transformer. The banded end of the diode goes away from the transformer. Put the diode on the end of one of the transformer leads (in series). A 100uf non-polarized capacitor goes from the banded end of the diode to the other wire coming from the secondary of the transformer.

My method was to use just a polarized capacitor instead of both a diode and a cap. I put the cap. on the primary (line) side of the transformer. The polarized cap. (C2) has to handle at least 100 volts since when the bell rings there is 90 volts d.c. on the line. The negative (-) side of the capacitor goes toward the transformer. If C2 is connected backwards the sound will still be noisy.

The capacitor used in Figure 2 and the diode used in Figure 1 are there to keep the voltage from feeding back to your amplifier.

Whichever circuit you try, I'm sure you'll find it quite handy.

Figure 2



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PIO CONTROLLER

A You-Build-It Parallel Bus Interface For XL/XE Computers.

By Bob Woolley [75126,3446]
(Downloaded from CompuServe by BRACE staffers)

This is a Parallel Bus hardware project that allows you to write your own handlers. It uses the PIO hardware in the XL/XE machines and the RAM under the OS ROM to intercept SIO calls, interrupts and RESET so you can do your own thing with them. A ramdisk handler and a coldstart switch are included. 256K is required for the ramdisks, but the controller itself is entirely external.

This file originated in the Atari8 section of CompuServe. It may be freely copied and distributed as long as this notice is included. REW

Zzzzt..... zzzzzzzttttt... zzzt..... zzzzt.

What the heck are those kids doing on Robert's computer?

Zzzzzzzttttt.... zzztt..... zzzzzzzzzzzt..... zzzztt!

Taking pity on the poor 1050, I venture down from the attic with visions of all those little plastic pieces self-destructing inside the drive. These machines only get so many seeks in them, then it's move into room 144 for the duration.

Hmmmmm. Leather Goddess of Phobos! Seems that someone actually read a review in the Journal! I suppose that this sudden interest comes with the fuzz on the upper lip and feet that are too big. Mrs. Pacman is relegated to the cartridge case - Strip Poker and LGOP are the hot items now!! The boys will survive this phase, I suppose, but judging from all the seeks that poor old 1050 has to do, it may never see the other side of 14. Every time Mark enters a command, the program goes to the drive!! I either have to ruin their fun or find a better way.....

The answer is to run from ramdisk, of course. Since I have a very trick piece from ICD, it should be easy. Take out the old MIO and plug it into Robert's 800XL. I know from experience that the 256K upgrade in his computer will not run most games since you have to have a handler in there someplace. With the MIO and it's built-in PIO handler, it is a piece of cake. Sector copy side two (the side you run the game from) onto the MIO ramdisk, boot from side one in the 1050 and swap D1: and D2: with a SELECT/RESET.....

Guess what?? It doesn't work! 256K in the 800XL, 256K in the MIO and I have to run to the 1050 for every entry!!! What a drag!! It seems that the program will not take being RESET. You have to switch disks when it asks for side two without disturbing any part of the memory. @*&!%$* If I just had some way to vector the I/O externally - with a switch or something. (oh, boy! He's gonna take the thing all apart and hack in a bunch of wires and stuff...) Maybe I can adapt the PIO controller that I'm working on in the attic?... Take a Supra MicroPort, add a couple of ICs, a switch or two, and write a little handler..... Voila!! A programmable, switch - selectable, PIO controller!!

Takes four ICs and a Supra MicroPort XL. It uses the memory under the ROM at location $D800 - $D8FF. You load any PIO code you like in there and run your program. It could be used as a printer buffer, a screen dump routine, I/O indirection, ramdisk, or anything that uses interrupts, RESET or SIO. The OS traps all three operations thru the PIO code. I used the RESET vector to provide a FREEZER (cold-start) function and the SIO vector to run two 96K ramdisks. Two switches select which ramdisk (if any) will respond to D1:.

Downstairs to the Den of Phobos.... Sector copy side one to RD1 and side two to RD2. Set D1: as RD1 and cold start using the new PIO function. Up comes the screen asking for side two..... Set RD2 as D1: and hit RETURN..... off they go into the cosmic clashes - no disk access at all! As an added bonus, the 1050 is set to D2: whenever a ramdisk is selected as D1:, so it is used for SAVE and RESTORE. Works great!!! I can finally use all this memory on programs not designed for ramdisks!

This is great for Robert and Mark, but how about something like Print Shop?? Well..... Sector copy side one to RD1 (some sectors will not copy due to the copy protection - not to worry, copy what you can). Then sector copy side two to RD2. Now, you must boot the original disk (the one you paid for... the one Broderbund sold you.... somebody pays for every copy, pal....) in the 1050. At the first screen, switch RD1 as D1:. The rest of the program will run from the ramdisk - switch in RD2 when required. Works just fine!!

So, how do we build this thing?

You need (Parts List):

1 - Supra MicroPortXL (They were selling them for $25 at the Santa Clara Atari Expo.)
1 - 74HC245 IC
1 - 74HC74 IC
1 - 74HC10 IC
1 - 74HC04 IC
3 - miniature switches that suit you
8 - 10K 1/4wt resistors

Assemble the Supra board power supply and 74LS688 decoder. note: do not install the 6520 PIA chip for this project. Mount sockets for the other four ICs and the three switches in the breadboard area of the card. Mark the components as:

IC1 - 74LS688	Part of MicroPort
IC2 - 74HC04	Inverter
IC3 - 74HC10	NOR
IC4 - 74HC74	Dual D Latch
IC5 - 74HC245	Buffer
IC6 - 6520	PIA - Even though not installed, I used this site as solder pads.

I am going to try to lay this out by giving you the wiring nets for each of the new ICs. That should be sufficient to duplicate the circuit.

NOTE: switches are wired: IC ---- sw n/o ---- +5v

IC5 -----

pin 1 - ground (gnd)
pin 2 - pin 2 of IC4 - pin 33 of IC6
pin 3 - pin 32 of IC6
pin 4 - pin 31 of IC6
pin 5 - pin 30 of IC6
pin 6 - pin 29 of IC6
pin 7 - pin 28 of IC6
pin 8 - pin 27 of IC6

pin 9 - pin 26 of IC6
pin 10 - gnd
pin 11 - 10K to gnd and COLDSTART n/o to +5v.
pin 12 - 10K to gnd
pin 13 - 10K to gnd Note: Additional switches
pin 14 - 10K to gnd could be wired to pins
pin 15 - 10K to gnd 12 thru 16
pin 16 - 10K to gnd
pin 17 - 10K to gnd and RD2 n/o to +5v.
pin 18 - 10K to gnd and RD1 n/o to +5v.
pin 19 - pin 6 of IC3
pin 20 - +5v

IC4 -----
pin 1 - pin 34 of IC6
pin 2 - pin 33 of IC6 - pin 2 of IC5
pin 3 - pin 12 of IC3
pin 4 - +5v
pin 5 - n/c
pin 6 - pin 43 of the PIO buss connector
pin 7 - gnd
pin 8,9,10,11,12,13 - n/c
pin 14 - +5v

IC3 -----
pin 1 - pin 4 of IC3 - pin 25 of IC6
pin 2 - pin 3 of IC3 - pin 4 of IC2
pin 3 - pin 2 of IC3 - pin 4 of IC2
pin 4 - pin 1 of IC3 - pin 25 of IC6
pin 5 - pin 1 of IC2 - pin 21 of IC6
pin 6 - pin 19 of IC5
pin 7 - gnd
pin 8,9,10,11 - n/c
pin 12 - pin 3 of IC4
pin 13 - pin 2 of IC2
pin 14 - +5v

IC2 -----
pin 1 - pin 5 of IC3 - pin 21 of IC6
pin 2 - pin 13 of IC3
pin 3 - pin 19 of IC1
pin 4 - pin 2+3 of IC3
pin 5,6 - n/c
pin 7 - gnd
pin 8,9,10,11,12,13 - n/c
pin 14 - +5v

Plug the MicroPort into the connector on the back of your 800XL and load the PIO code. When you hit RESET, the controller will be enabled on the PIO buss. Hold the COLDSTART switch down when you RESET, count to 3 after you release RESET and let go of COLDSTART. The system should go to the diagnostic (? -- that's a diagnostic??) screen. From there, you will coldstart when you hit RESET. Hold OPTION down at this point if you don't want Basic.

The operation of the other two switches is programmed to enable 96K of Rambo memory as a ramdisk that responds to SIO requests to D1:. When either ramdisk bank is enabled, the 1050 drive numbers are bumped by 1 - that is, a drive addressed as D1: on the SIO buss will answer a SIO call to D2:. YOU can program it any way you want - you don't need an EPROM burner for this guy! In fact, there is no memory in the extra hardware at all.

If you would like to be able to select more options on your unit, add switches to pins 12 thru 16 of IC5. The COLDSTART switch will LDA from $D1xx as an $80. RD1 reads as $01. I leave the other values as an exercise to the programmer. If you really have a problem with this device, leave me [75126,3446] a message on CompuServe in the Atari8 SIG - no E-Mail, please, OK?

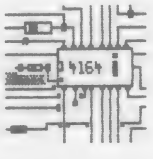
For those of you with an XL without the 256K upgrade -- there is a version of this project that has up to 256K of battery retained memory up in my attic... somewhere.....Probably near the 1200XL version..... someplace.....

(Here is the MAC65 source code of ramdisk and coldstart handler for this project. Ed.) It does not show loader that puts the code under the OS ROM at $D800.

```
0100 ;SD RAMDISK CODE 6-28-87
0110 ;BOB WOOLLEY [75126,3446]
0120 ;
0130 SAV301 = $31
0140 SRCELO = $32
0150 SRCEHI = $33
0160 DESTLO = $34
0170 DESTHI = $35
0180 DSTCTL = $37
0190 SRCCTL = $36
0200 DVSTAT = $02EA
0210 SDEVIC = $0300
0220 SBUNIT = $0301
0230 DCOMND = $0302
0240 DSTATS = $0303
0250 DBUFLO = $0304
0260 DBUFHI = $0305
0270 DBYTLO = $0308
0280 DBYTHI = $0309
0290 DAUX1 = $030A
0300 DAUX2 = $030B
0310 COLDSTART = $E477
0320 SWVALU = $D1F0
0330 ;
0350     *=  $D800
0360     .BYTE $00,$00,$00
0370     .BYTE $80   ;$D803
0380     .BYTE $00
0390     JMP SIOVEC  ;$D805
0400     JMP IRPVEC  ;$D808
0410     .BYTE $91   ;$D80B
0420     .BYTE $00,$00,$00,$00
0430     .BYTE $00,$00,$00,$00
0440     .BYTE $00,$00,$00,$00
0450     .BYTE $00
0460 ;
0470 ;$D819 - INIT VECTOR
0480     LDA SWVALU  ;CHK COLDSTART
0490     AND #$80
0500     BNE WARMSTART
0510 WAITUP LDA SWVALU
0520     AND #$80
0530     BNE WAITUP
0540     JMP COLDSTART
0550 WARMSTART LDA #$01
0560     STA $0247   ;SET DEV BIT
0570     RTS
0580 ;
0590 IRPVEC RTS
0600 ;
0610 PDEVIC .BYTE $31
0620 MAXLO .BYTE $D0
0630 MAXHI .BYTE $02
0640 ;
0650 SIOVEC LDA SDEVIC
0660     CMP PDEVIC
0670     BNE SERBUS
0680     LDA SWVALU
0690     AND #$03
0700     BNE D1RAM
0710 ;
0720     LDA SBUNIT
```

```
0730     CMP #$02
0740     BNE SERBUS
0750     BEQ RAMDSK
0760 ;
0770 D1RAM LDA SBUNIT
0780     CMP #$01
0790     BEQ RAMDSK
0800     INC SBUNIT
0810 ;
0820 SERBUS CLC      ;NOT FOR PIO
0830     RTS         ;BACK TO OS
0840 ;
0850 RAMDSK LDA DCOMND
0860     CMP #$53
0870     BEQ STATUS
0880     CMP #$21
0890     BNE RDWRT
0900 ;
0910     LDA DBUFLO
0920     STA SRCELO
0930     LDA DBUFHI
0940     STA SRCEHI
0950     LDA #$FF
0960     LDY #$00
0970     STA (SRCELO),Y
0980     INY
0990     STA (SRCELO),Y
1000 STATUS LDA #$00
1010     STA DVSTAT
1020     STA DBYTLO
1030     STA DBYTHI
1040 ;
1050 DONE LDA #$01
1060 RETURN STA DSTATS
1070     TAY
1080     SEC
1090     RTS
1100 ;
1110 CMDREJ LDA #$01
1120     STA DVSTAT
1130     LDA #$8B
1140     BNE RETURN
1150 ;
1160 RDWRT CMP #$52
1170     BEQ SETREGS
1180     CMP #$57
1190     BEQ SETREGS
1200     CMP #$50
1210     BNE CMDREJ
1220 ;
1230 SETREGS LDA DAUX1 ;SECTOR # -1
1240     SEC
1250     SBC #$01
1260     TAX         ;X HOLDS SECLO
1270     LDA DAUX2
1280     SBC #$00
1290     TAY         ;Y HOLDS SECHI
1300     CMP MAXHI
1310     BCC SIZEOK
1320     BNE CMDREJ
1330     TXA         ;SECHI=MAXHI
1340     CMP MAXLO   ;SO, CMP MAXLO
1350     BCS CMDREJ
1360 ;
1370 SIZEOK LDA SWVALU ;WHICH RAMDSK?
1380     AND #$02
1390     BEQ SETCTL
1400     CLC
1410     TYA         ;BUMP SECTOR HI
1420     ADC #$03    ;BY $300
1430     TAY
1440 SETCTL TXA      ;GET SECLO
1450     ROL A
1460     TYA         ;GET SECHI
1470     ROL A
1480     TAY
1490     TXA         ;GET SECLO
1500     ROR A
1510     AND #$3F
1520     ORA #$40    ;POINT TO $4000
1530     STA SRCEHI
1540     STA DESTHI
1550     LDA #$00
1560     ROR A
1570     STA SRCELO
1580     STA DESTLO
1590 ;
1600     LDA $D301
1610     STA SAV301  ;SAVE FOR AFTER
1620     AND ANDBYT  ;ZERO SEL BITS
1630     ORA ORLIST,Y ;SET SEL BITS
1640     STA SRCCTL
1650     STA DSTCTL
1660 ;
1670     JSR SETDIR
1680 ;
1690     LDY #$00
1700     LDX DSTCTL
1710 MOVDAT LDA SRCCTL
1720     STA $D301
1730     LDA (SRCELO),Y
1740     STX $D301
1750     STA (DESTLO),Y
1760     INY
1770     BPL MOVDAT
1780     LDA SAV301
1790     STA $D301
1800     JMP DONE
1810 ;
1820 SETDIR LDA DCOMND
1830     CMP #$52
1840     BEQ RDCMD
1850     LDA DBUFLO
1860     STA SRCELO
1870     LDA DBUFHI
1880     STA SRCEHI
1890     LDA $D301
1900     STA SRCCTL
1910     RTS
1920 ;
1930 RDCMD LDA DBUFLO
1940     STA DESTLO
1950     LDA DBUFHI
1960     STA DESTHI
1970     LDA $D301
1980     STA DSTCTL
1990     RTS
2000 ;
2010 ;ICD RAMBO
2020 ANDBYT .BYTE $83
2030 ORLIST .BYTE $20,$24,$28,$2C
2040     .BYTE $40,$44,$48,$4C
2050     .BYTE $60,$64,$68,$6C
2060     .BYTE $00,$04,$08,$0C
2070 ;
2080     .END
```

****



800 CARTRIDGE EMULATOR FOR THE ST

By Dale Mellott and Dick Basso
(Excerpted from SPACE PROBES, July 1987)

We just witnessed another of the marvels of what young minds can do if the challenge is worthwhile.

A young, gifted programmer, Steve Jones, like Darek Mihocka *("ST TRANSFORMER", Ed.)*, has his own ideas about the capability of 8 and 16 bit computers and how to get the most out of them. Steve has been a software engineer for about eleven years and has his own small software company, "Jonesware".

Using a 520ST, Steve soon had a familiar screen displayed that we have often seen on the 8-bit. However, it was much sharper as it was displayed on a SC1224 color monitor. The first program that he demonstrated was the Assembler Editor and the performance was just like the 8-bit computer. He did various graphic and text editor demo's using the Assembler Editor program. He then switched to BASIC and demonstrated various programming techniques that you would normally see on an 8-bit computer. He next loaded SMARTDOS RAMD and from there proceeded to run the MAGIC LANTERN program and loaded various pictures that you see on the 8-bit computer. A picture on the 8-bit loads in 45 seconds. Loading by the emulator into the ST takes about 120 seconds. Planned improvements will eventually reduce this time to 60-70 seconds. Steve then loaded QUICKLOADER and the selection menu of games appeared just like you would see it on your 8-bit computer.

Work on the 8-bit Cartridge Emulator was begun in late April. At the present time, it still lacks the capability of doing either player missile graphics or sound. Development is continuing to speed up the emulator by using optimizing routines to allow more efficient time sharing of the various computer components to improve the processing time. The present speed of operation is estimated to be 70 percent of the normal 8-bit machines. All SIO operations are 110 percent of the normal 8-bit computer. The emulator is Axalon compatible and is able to utilize the extra memory of the ST. Printer and modem capability are supported either through 8-bit or 16-bit.

NOW THE FUN PART. Steve then demonstrated a version that emulates a FRANKLIN (APPLE clone) computer. Although we don't know much about Franklins, we were really impressed. A Commodore Emulator is also being developed.

We have personally seen the first version of Darek's emulator run on a 1040ST and have now witnessed Steve's Cartridge Emulator. We can both attest to the fact that the speed of operation for Steve's emulator is much faster.

Steve Jones uses a Cartridge Emulator similiar to the Magic Sac Cartridge made by Data Pacific. Rather than get into problems using proprietary operating system code, Steve's emulator will use the operating system ROMs found in the particular system that is being emulated. The Atari 800 Cartridge Emulator will also have its own cartridge slot for 8-bit (left slot) cartridges. The emulator is expected to be available before Christmas '87. It will cost about $50 without ROMs, but include the necessary software. Other hardware will eventually be available to include special cables to connect 1050 drives or the 850 interface to the RS232 port of the ST. The emulator will also eventually be capable of adapting mouse and MIDI operations.

The Steve Jones emulator will be demonstrated at our next club meeting on July 6, 1987. This demonstration may have more surprises because the sound and player missile features may be ready by that time. AtariWriter and Synfile demos are planned utilizing the extra memory of the ST. A further advantage is that the emulator can work with the 3.5 inch ST disk drive. Thus up to seven 1050 disks of data files can be placed on one 720K double sided 3.5 inch disk.

JONESWARE
PO Box 7037
Mechanicsburg, PA 17055

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COMPUTER QUIZ

Compiled by Big Al, BRACE/S*P*A*C*E/STARBASE

Here is a simple quiz to test your computing position. Answer each one yes or no and compare your answers to the rating at the bottom.

1. Do most of your friends have computers?
2. Do you use your computer everyday?
3. Have you ever forgotten what someone was telling you while you were using a computer?
4. Have you ever eaten a cold dinner or missed dinner because you were computing?
5. Have you ever spent more then you could afford on computer items?
6. Were the last 5 books you read about computers?
7. Have you taken over parts of your house just so the computer has enough room to work in?
8. Have you ever lost sleep because you were using the computer?
9. Are most of the gifts you recieve related to computers?
10. Have you ever lied to get out of doing something so there more time to compute?

This highly unscienific test was designed to be funny so don't be too worried if it did not make much sense. The results show if you answered yes to 5 or less questions, you are either still normal or you just brought the system last week. Between 5 to 8 yes's mean you should look for treatment of your addiction. Nine or 10 positive responses and you are hooked just like the rest of us and you might as well make the best of it. We need to stick together and try to get others to join the ranks of the Atari fanatic.

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Club News

Participating Puget Sound Area Users Groups

B.R.A.C.E.

Bellevue Redmond ATARI Computer Enthusiasts

PRESIDENT	Jim Yee	643-9697
VICE PRESIDENT	Richard Coate	547-0460
CO-EDITORS:	Max Pinton	455-3548
	Wally Wong	641-1866
TREASURER	Joe Asaif	746-0737
SECRETARY	Gary Skelton	454-7488
BBS SYSOP	Everett Tsang	

Meets: 2nd and 4th Mondays of the month at 7:00 PM at the Lake Hills Library, 15228 Lake Hills Blvd, Bellevue, WA.
Mail: P.O. Box 70097, Bellevue, WA 98007.
BBS: BRACE BBS - Coming soon!
Dues: $15 per year.

BRACE MEETING MINUTES

Submitted by Gary Skelton, Secretary

BRACE May 26th Meeting

The meeting was held on Tuesday, May 26, due to Memorial Day holiday falling on Monday, our usuall meeting day.. An effort was put forth by some of the officers to contact all the members to inform them of the date change. The meeting was conducted by Vice-President Rich Coate in Jim Yee's absence. Rich gave a very positive report on the success of TREK 87 and the possible outcome for BRACE.

Rich demo'd the Alladin Disk publication for the group. Alladin disk magazine comes both in an 8 bit version and a 16 bit version. As the evening was all demos Joe Mraz showed some of the Portland Atari club disk that were traded between our libraries. One of particular note was an education disk that will make an excellent addition to our library. The evening was closed out with more demos.

BRACE June 8th Meeting

President Jim Yee opened the meeting with a brief summmation of the Atari booth and products at the Chicago Consumer Electronics Show that he had recently attended. There was much more presentation of the Atari PC and the new configured game-computer XE machine. Rich Coate announced a contest for a new membership card that will be announced at the second meeting in July.

In a formal resolution Rich Coate motioned and Gary Skelton seconded that BRACE purchase a 16 bit St machine for club use with the proceeds from our share of the TREK 87 funds. A call for discussion was asked and there were none. The resolution was passed by the majority. Another resolution was passed that the 16 bit librarian would be responsible for the new machine and that Rich Coate would be responsible for assisting in the choice for the position.

Vic Albino gave a short talk on TREK 87 and informed the group that it was being formally unincorporated and that it had been much more successful than anticipated. Gary Skelton proposed that BRACE itself be incorporated. This will be looked into for the near future. Al Cummings announced that Precision Electronics in Redmond will have a labor-free hardware upgrade (cost of parts only), on July 18. A signup sheet went around for this. For the 16 bit demo Jim Yee demo'd Gold Runner.

KC-Ace's

Kitsap County ATARI Computer Enthusiasts

TEMP. PRESIDENT	Bill Penner	(206) 373-4840
SECT'Y/TREASURER	Mack Burns	" 437-2751
EDITOR	Darren Tonnessen	" 842-3992
8-Bit LIBRARIAN	Wayne Boivin	" 674-2140

Meets: The 2nd Wednesday of the month at 7:00 PM at the Westpark Lanes, near Autocenter Way. (Note: Meeting site may change in September! Look for announcements or check with any officer.)
Mail: P.O. Box 2333, Bremerton, WA 98310.
Dues: $15 per year. Size: 75+ members.

LETTER FROM THE PREZ

Well, something happened last month and my newsletter article did not make it. Oh well, small problem. Well not much to report, since not much is going on. Being the middle of summer, everyone is outside instead of playing with their toys.

Sometime in September we will be having a potluck picnic. The place has not been set yet, but it will be soon. I would like to thank all of the help that we received from Les Theisen and John Fernandez. Both of these people are (or have) left the area to bigger and better (?) things. Thanks for all of the support over the last year or two.

I would like to say congratulations to a recognized computer wiz. Recently Darren (our newsletter editor) entered a programming contest at the Naval Undersea Warfare Engineering Station (where I work). The contest was open to teams of programmers from several local high schools. They were required to solve programming problems on an IBM (nothing's perfect). Darren's team came in first. Another member, Burley Kawasaki, was on the third place team. It is nice to see people from our club doing so well in local programming competition. Congratulations!

Well, that's about all I have time for now. Gotta get back to the projects, so that maybe I can get something out to market. Good luck and happy hacking!

Bill Penner (Prez)

KC-ACE's JULY MEETING MINUTES

By Darren Tonnessen

Our first meeting at Westpark Lanes was opened at 7:37 pm by our president, Bill Penner. There were approx. 16 people in attendance. Our old Treasurer, John Fernandes gave his last report. We have approximately $70 in cash, not including $1202.80 from our portion of the Atari Trek proceeds. 5-1/4" disks are in plenty, and they sell $5 for 10. We now have Sony 1DD 3-1/2" disks for $1.25 each or if you buy 15 you get a free carrying case. A box of 15 is $18.75.

Mack Burns is our new Secretary/Treasurer, and will be in charge of selling disks, and collecting membership fees. It is advised to pay soon so that you do not lapse in getting a newsletter. Everyone is due in September.

Bill was going to demonstrate the New TOS roms, but his computer died. Some software was demonstated, and the meeting ended at 7:55 pm.

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**********************************************************
* KC-ACE's MEETING NOTICE!                               *
* Remember: The August meeting will again be at the      *
* WEST PARK LANES in BREMERTON, near Autocenter Way,     *
* at 7:00 PM on August 12th (the 2nd Wednesday).         *
* - - - - - - - - - - - - - - - - - - - - - - - - - - -  *
* Warning: August may be our last meeting here, so       *
* if you don't get word by the next newsletter or        *
* meeting; contact one of the above club officers!       *
**********************************************************
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R-Atari

Users Group

PRESIDENT	Thom Lawless	(206) 321-5127
VICE PRESIDENT	Greg Barnes	" 678-6305
SECT./TREASURER	Rich Lyon	" 675-6882
LIBRARIANs:	Eric Koetje	" 675-4326
8-Bit	Randy Nollan	" 679-2216
ST	Alex Ancheta	" 675-7628
EDITOR	Greg Barnes	" 678-6305
ASST. EDITOR	Charles Onley	" 675-0425
SYSOP	Thom Lawless	" 321-5127

Meets: The third Saturday each month at 7:00 PM (6:00 PM setup time) at the YMCA on Pioneer Ave., Oak Harbor, WA.
Mail: P.O. Box 845, Oak Harbor, WA 98277
BBS: THE FREELANDER BBS, (206) 321-5127, 9:00 PM - 8:00 AM.
DUES: $12.00 per year.

FROM THE PRESIDENT
By Thom Lawless

It's going to be a very busy meeting this month. The final judging for our programmers' contest will take place at the August 15th meeting. We will also be incorporating some very important changes into our club's constitution. Be there, your vote counts too!

I will not be doing my usual machine language presentations this month as our agenda for the meeting is quite full. I will continue the presentations in September. I could use a few new ideas on what you would like to see me cover in the next few months.

I'm still waiting to hear more about PSAN becoming a self governing entity. If you have any ideas or comments concerning this please feel free to bring them up at any meeting or to me personally or any other officer at anytime. We will pass on your comments/ideas to the appropriate officers' at PSAN.

PSAN is now soliciting for authors to write bi-monthly columns in your own area of expertise. Be it software reviews, hardware modifications, or programming in your favorite computer language. Interested? Contact Jim Chapman of S*P*A*C*E or any officer of our club for further details.

The stocking of PSAN newsletters at IsleTech will also come up this month as this is the end of our trial period with them. Rich Pratt, (the owner), has asked us to double his quota (we have), and to continue stocking the PSAN at his store. We'll discuss this further at the meeting. Again comments/ideas are being solicited for this pending action.

I have one last comment for those folks who are thinking about becoming members of any Atari Club, come on down to the meetings and check them out. You won't know if you like it unless you try it! Well, that's about all I have for this month in this column. See you at the meeting...

Thom

SECRETARY/TREASURER'S REPORT
By Rich Lyon

We continue to gain new members, whose dues and our continued P.D. sales have brought the club balance to a total of $237.34.

On to new business. The May meeting was effectively cancelled due to the popularity of ATARI TREK.

The June meeting was well attended by many of our members. The officers meeting started at 6:30 P.M. and we discussed what we would cover during the general meeting. At 7:00 P.M. the June meeting was called to order by the president.

It was recommended that we amend the constitution to correct areas that have changed. So, in keeping with the bylaws, written copies of the proposed amendments will be available to all members. I gave the Treasurer's report and mentioned that the May meeting had no minutes to cover.

Randy Nollan displayed the new disk bank with the new disks that he will use to start setting up our backup P.D. library. The new club LOGO was also displayed to the group. It looked pretty good.

Alex Ancheta stated that he would shortly have a listing of all the club ST programs. It should be ready for the July meeting.

Thom Lawless stated that the supply of PSAN that we provide to ISLETECH needed to be increased since all of the copies there have been selling out quickly.

Everyone was then reminded that the programmers' contest entries needed to be in for the July meeting for demonstration to the group. After the main meeting Thom provided a short presentation in his continuing series on machine language programming.

Rich

LIBRARIANS' REPORT
By Randy Nollan and Alex Ancheta

We are still very busy working on that auto-boot screen you have been reading so much about in the last few issues of the PSAN. I'm sure everyone will be impressed (once we do complete it).

The disk library has grown even bigger. We have received AMODEM 7.4 from S*P*A*C*E (Thanx Jim). Another new addition is a good game for all you fans of WHEEL OF FORTUNE. This game is better than the game show on T.V. because you are the one spinning the wheel and picking the letters. This one was donated from our very own Club President (Thank You Thom). I have also been informed that we have just received a few disks from our one and only member in California Penny Ormstrom (Thanx Penny). I'll let everyone know what all these disks consist of next month because as of right now I don't even know what's on them. That takes care of the 8-bit additions.

As for the 16-bit library we have about 20 disks worth of all kinds of different programs to add into the library. These will be a part of the library by next month. If you want more information please call Alex, the 16-bit librarian, for program names and copies.

Anyways, disk sales are up from last month. We have sold another $8.00 worth of software. Remember we have blank disks for sale at 50 cents a disk too.

HAPPY COMPUTING ! ! !
Alex and Randy

S*P*A*C*E

Seattle Puget Sound Atari Computer Enthusiasts

PRESIDENT	Jess Lantz	473-2420	Tacoma
VICE-PRESIDENT	Cindy Bowman	248-2238	Seattle
SUB-GROUP PRESIDENT	Bill Grein	848-6439	Puyallup
ST PRESIDENT	Dave Showalter	824-5141	Kent
HARDWARE SIG LDR.	Greg Pringle	------	Tacoma
CORRESPONDING SECT'Y	Dave Bambaloff	584-8375	Tacoma
RECORDING SECT'Y	Cindy Bowman	248-2238	Seattle
TREASURER	Tom Neitzel	473-0187	Tacoma
LIBRARIAN	Jim Chapman	582-4269	Tacoma
ST LIBRARIAN	George Terpening	941-7155	Auburn
MEDIA LIBRARIAN	Blake Herring	564-3265	Tacoma
PROGRAM CHAIRMAN	Rod Dickison	431-9820	Seattle
EDITOR	Chris Carson	565-8189	Tacoma
BBS SYSOPS:	Dave Showalter	824-5141	Kent
	Robert Smith	941-5537	Fed. Way

Main Meeting: 1st Saturday of the month at 6:00 PM at the A.P.P.L.E. Co-Op, 290 SW 43rd St., So. Renton, ph 251-6787.
Tacoma Sub-Group: 2nd Saturday of the month at 10:00 AM at the South End Neighborhood Center, 7802 So. L St., Tacoma, ph 591-5098.
ST SIG: 2nd and 4th Tuesdays of the month at 6:00 PM at Butler's Computer Service, 28717 Pacific Highway So., Federal Way, WA, ph 941-9096.
Hardware SIG: 4th Saturday of the month at 10:00 AM at the South End Neighborhood Center, 7802 So. L St., Tacoma, ph 591-5098.
BBS: S*P*A*C*E, (206) 941-2824, 24hr., 300, 1200, 2400 baud.
Mail: P.O. Box 110576, Tacoma, WA 98411-0576.
Dues: $15 per year. Size: 250+ members.

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* MAIN MEETING NOTICE *
* The AUGUST 1st S*P*A*C*E MAIN MEETING will again *
* feature SPECIAL DOOR PRIZES for both 8-Bit and ST. *
* The prizes will be top quality, new software! YOU *
* MUST BE PRESENT TO WIN! Drawings will be during *
* the mid-meeting business session - about 7:15 PM! *
* Next meeting is SEPTEMBER 5th. ATTENDEE SPECIALS! *
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TREASURER'S REPORT

By Tom Neitzel

We currently have $4,552.51 in the Treasury, thanks to our distribution from Atari Trek'87 of $4,266.40. We also have about $700 in accounts receiveable (1 Happy package plus about $600 in newsletters costs).

Recent acquisitions include a second 520ST CPU only obtained by Dave Showalter at the World of Atari show in June for $195. We also just bought the IB computers dual, DS/DD disk drive kit for the ST. The library has been restocked with 1000 colored 5 1/4" and 400 3 1/2" diskettes and have obtained 2 additional Happy Enhancements to make a total of 4 for library use. Now all we need is two more 1050s for the Enhancements. Anybody got any used equipment?

Please let an officer know if you have anything that you think the club should spend its money on. The board is now leaning toward buying an HP LaserJet II w/ 1 meg memory laser printer for the club's and PSAN's use. The cost will be $2,200 to $2,300. Let us know your thoughts.

LIBRARIAN'S REPORT

by Jim Chapman

Just a few quick notes... We are again selling our public domain disks at Computers+ in Tacoma. Computers+ is stocking the PSAN newsletter, too. Long time member, Cliff Boyce (who also works there), has volunteered to act as our agent. Also, because the club's NEC P-6 printer has been affected by some mysterious malady (it won't work on Atari computers, 8 or 16 bit; but it prints just fine on PCs, and the self-test works ok, too!), Cliff has gratiously allowed us to use his personal NEC P-6 to printout this month's newsletter. Thanks much, Cliff.

George Terpening, the ST Librarian, has enlarged the ST library up thru Disk #53. His vacation trip to Washington D.C. (in late July) may even reap additional items for the Library! George also has updated ST Disks #10, 22, 30, 32 and 38 to Version 2. If you have Version 1 of any of these disks, bring it (them) to any meeting for updating.

Due to the large amount of my time required for newsletter activities and transportation difficulties, I have been unable to properly maintain our disk sales stock at Butler's during the past month. My apologies to any who were inconvienced. This will be corrected by the time you read this.

Also, I'm trying hard to 'get out' new disks to our 8-Bit library. Just received from Jerry Anderson (Librarian of the Portland Atari Club) is an excellent program called CODEBUSTER, a disk/file editor for experienced users. Thom Lawless, R-Atari Club, (again) send us the 'Q' DISK containing all of his XL/XE memory upgrade RAMdisk and other work files. Additionally, we've just sent several exchange disks to the users' group in Wenatchee, WA. And...Bob Banse, our secret agent in Iowa, is working on library exchanges with several Eastern groups, including at least one in the Washington D.C. area.

One last item, in closing; AMODEM 7.5 (Freeware, not PD) is now out on several local BBSs. It will be added to the library soon.

S*P*A*C*E MEETING MINUTES

By Cindy Bowman

June 23rd ST SIG Meeting

We opened this meeting with Carolyn Caine showing a VCR tape of the Atari Show she attended at the Santa Ana Convention Center. The tape shows many of the newer Atari products introduced, such as the Mega ST, Atari PC, Atari Laser Printer, and the IMG picture scanner which sold out quickly at the show. It was quite nice to finally get a little better glimpse of the new Atari products, especially for those who were unable to get to California to see the show. Thank you Carolyn!

Dave Showalter then 'took the stage' to show some of the programs and publications he picked up at the Santa Ana show. He demonstrated a demo from Antic called Ciberscape, and ST Replay, which is a program that records and replays sounds through your computer. You can save your sounds to disk, and it has the oscilloscope (shows waveforms) and spectrum analyzer features.

Dave and Carolyn also mentioned that there was very little 8-bit support at the Santa Ana show, with the exception of a booth showing most of the older Atari computers, whether they be prototype models that never made it to market, or production models. Dave also mentioned that since the club's current ST is being utilized almost exclusively for the newsletter, etc., the club purchased another Atari 520ST keyboard with mouse, which was selling at the show for $199.

Carolyn mentioned that during a discussion on desktop publishing at the show, Leonard Tramiel indicated that the fonts for Fleet Street Publisher and the fonts for Easy Draw were interchangeable, although both developers for the two programs were unaware of that fact. Migraph indicated that

the fonts would have to be a 10 point and 7 point font. Interesting!

Dave then demonstrated a CAD program from Iliad Software, called Athena II. Iliad produced the product, tested it and took it to CSS, a nationwide distributor for all computer dealers. CSS found a dealer to accept several hundred then lost the number for the product in their computer. Iliad's product is somewhere in CSS's warehouse and nobody can order it until they find it! So far Iliad has sold a few in their local area in Orim, Utah.

Athena II has many of the CAD features. It runs in low resolution or high resolution only. Most of the features included are elipses, axis, lines, angles, boxes, circles, vertical and horizontal, point to line, line to line, point and radius, center lines on/off, dimensions, trim, full scale, zoom in/out, fillings, rotate, grids, layers, isometric drawings, and curves. It requires 1 megabyte of ram, and suggests running it with two double sided drives so you don't have to keep switching drives. It is not copy protected so you may set it up on your hard drive.

Next, Dave mentioned he had just acquired a lot of Magic Sac software as well as the newer version of Magic Sac which gets rid of some of the bugs. Also he had alot of GFA Basic programs, both of which will be available in the S*P*A*C*E library in the future.

A trac ball from an old Atari game machine that had been modified to fit an ST system, was demonstrated. Various other questions were polled to the group for anyone's opinion or solution. Also a brief demonstration of the game Shanghai was shown, and the meeting drew to a close.

July 4th MAIN Meeting

Independence Day! There was no main meeting this month. I will resume with the next main meeting on August 1st.

July 14th ST SIG Meeting

The meeting opened with a demonstration of the IBM emulator currently out on the market, called PC Ditto. Dave was using his computer and was having some difficulties. He mentioned that he hasn't determined whether it is the new ROM's in his computer that were the problem or not.

Again, all were reminded of the discount offer available for user group members to receive a subscription to the Current Notes newsletter; we need five more to sign up to start the discounted subscriptions. Dave mentioned that the club was considering the possibility to purchase another subscription or two (we get one now in the exchange program) since not all members see Current Notes.

Dave mentioned his recent trip to Portland and the fact that I.B. Computers was discontinuing their efforts to market their two, double-sided disk drives in one case. It seems that with Atari's release of the Atari 520ST FM which includes a built in double-sided drive, I.B. Computers doesn't see much demand for two double-sided drive units, at least in the Portland area. Since a large part of the cost of the two double-sided drives are the steel case, power supply and cabling. This would not be too price competitive with only one drive, compared to two drives in a single case.

Dave also demonstrated the new TOS which he had installed in his computer. The version he had was the version being shipped to developers. Some differences are the fact that you can now hold down the mouse button and it will scroll through the menus, turn the blitter on and off (when it is available), displays all printable characters, and the bugs were fixed! One major problem is with developers who did not follow Atari's rules exactly when developing software for the ST. Those programs will probably cause problems when trying to run them with the new ROM's.

Next was a demonstration of an emulator. You can get the source code in the next issue of START magazine. It lets you choose which computer you want to emulate...an Atari 800, Apple II, or Commodore 64.

Other new software products mentioned were Auto Duel for the ST, a VT100 emulator on cartridge, and a VT220 emulator on disk.

George Terpening mentioned that he just received D Basic for the club. The disks and labels are for distribution as long as their labels remain on the disks being distributed. You have access to the total machine and it is very fast; it has its own operating system. A brief look through the disk and a few demos were shown. Details on distribution will be announced soon.

A game was demonstrated and the MS DOS emulator was shown too. Dave read many of the IBM programs that can run from the emulator and Dave offered to print the entire list after the meeting for anyone who wants one.

A question and answer session and the meeting adjourned at about 7:30pm.

HARDWARE SIG NOTES

by Kit Carson

The Hardware SIG will have a new temporary leader (probably Nick Berry). I now have a Saturday job and can't attend. I will continue to offer whatever support I am able to, however. Greg Pringle, the real leader, will be returning to us in September after he finishes some out of state Air Force Reserve obligations.

Don Nelson, with help from members of SPACE (St. Paul, MN), discovered that the 810 disk drive power supply is able to power his Indus disk drive (the original power supply happened to burn up while he was visiting there). Has anyone heard of potential problems with this arrangement?

If you have any tidbits about hardware that you would like to share, contact Nick or I, either directly or through the club bulletin board.

NOTES FROM THE OLD FOLKS HOME

A History of S*P*A*C*E, Part 1

By Jerry Wright

Well, sonny, I remember it like it was yesterday...

Actually, it was a lot further back than yesterday, but return with us now to those days of yesteryear; December of 1980. In some ways, that isn't so long ago. In other ways, it's a different generation.

I'd purchased my Atari 800 (24K of RAM, a 410 Cassette, BASIC, VIDEO EASEL, the Dorsett Educational Cartridge, and of course STAR RAIDERS) for $1080.00 in August. I was still fumbling around with the basic concept of even))HAVING((computer, much less doing something meaningful with it, and I spent much of my free time down at Computers Plus (later Kent Video and Computers, and then Creative Computers) in Kent trying desperately to learn anything I could.

While down at KVAC, I met Mike Potter and Lloyd Ollmann Jr., two hotshot programmers destined to make a big difference in the way I looked at computers and programming. I remember walking into the store and watching Mike struggle with character set modification. I didn't even know that the shapes of letters on the screen were just little patterns that could be changed into whatever shape you want them to be, as long as they were 8 dots by 8 dots. Mike later went on to

work for Crystal Computing, where he single handedly created their Atari line of programs, and then after they stopped paying him, he took the programs he'd been working on over to Synapse, and came out with things like PROTECTOR, NAUTILUS, and other game type programs.

Lloyd was the first person to show me the Disk Utilities Package (DUP.SYS) . Prior to that time, as far as I knew, DOS meant to find a place to sleep, as DOSS down for the night... He also transferred some 8K and more games onto tape for me. The beginnings of my software library... Then he showed me a neat game about a Kamikaze plane. Written in BASIC with a million plot-drawtos, but still incredible fun. Then an adventure game. That took 25K. Arrrgh... ERROR 2 Out Of Memory...

Oh well. Anyway, one Saturday in late December I stumbled into the store about 3 P.M. and saw Lloyd. He asked what I was doing that evening, and when I replied, "Nothing." he told me to come back at 6 and go up to Seattle for some kind of a get together. I had no idea what I was in for. My first User Group meeting.

When I came back to the store, Lloyd introduced me to our driver, Tom Newman (later to be twice president of S*P*A*C*E) and away we went to the BYTE SHOP on 2nd Avenue in Seattle. The Byte Shop had 3 or 4 Ataris, as well as Apples, and NorthStar Computers. (Remember, this was before the days of Incredibly Bad Management PCs.) The store was closed, and they hustled us into the Employee Conference room in the back.

In this little room, the nucleus of S*P*A*C*E was formed. I wish I could say I was there at the first meeting of the group, but that had been held the week before. However, prior to this second meeting, it was just a group of interested users. At the second meeting, the group formally adopted the name Seattle Puget-sound Atari Computer Enthusiasts. It's funny... I can remember some of the 18 original members, but many have moved on. Some out of the state, some out of Atari, some, just out of the group. But here are those I remember...

Kevin Makkela... Kev actually started the group, in hopes that it would help the Byte Shop sell more Ataris, and provide a resource for others.

Oscar Hasten... Another Byte Shop employee, and a combination salesman/hacker.

John Allen... Editor extraordinaire. John came up with the name Messages From S*P*A*C*E (now you know who to blame) and edited the first year's letter.

Tom Newman... Teacher, programmer and hardware hacker, and by the time Atari "went under" more knowledgeable about the 8 bit system than anyone at Atari.

Lloyd Ollmann Jr. At the time, he was a cook at Dennys, but knew more about the insides of a CPU than the instructors at his VOC TECH class.

and me... Totally novice neophyte. "What does DOS mean?"

Next Month: The first newsletter and BBS.

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SUPPORT THE LIBRARY
BUY A DISK!

STARBASE

ATARI COMPUTER USERS GROUP

PRESIDENT	Rob Hendershot	745-3440
VICE PRES 8-BIT	Omar Crawford	653-7671
VICE PRES 16-BIT	Doug Olsen	743-4135
SECRETARY	Wilma Crawford	653-7671
TREASURER	Steve Drake	782-3691
EDITOR	Al Cummings	784-8658

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* Give us a call if you need help. *
* We want to know how to help the group! *
****

Meets: 2nd Friday of the month, 6:00 PM at the Mountlake Terrace Library, 236th SW & 52nd Avenue West, Mountlake Terrace, WA.
Mail: c/o Steve Drake, 8307 27th NW, Seattle, WA 98117
Dues: $15 per year. Size: 85+ members.

FROM THE PREZ
By Rob Hendershot

Well, another month has gone by, only one month to go before school starts and summer has ended, and it's back to work for all you vacationeers.

I realize that many of you did not receive your PSAN before the meeting. You have to realize that other people take vacations too. And this is a volunteer organization, don't you know, and has to be worked on in 'spare' time. What with the holidays, vacations, getting the articles together, and demands on the printer, it's no wonder it's late. But I'm still gratefull to be getting a First Class news letter as this. So any help you as a user could give will be most helpful. Anything would be of help, even, UGG, writing something for the paper. A column, a review (good or bad, especially if it's bad), maybe your favorite petpeve. Do it, somebody out there will appreciate it, if non-other than the phone company when they send you your bill. And try to get your article in before the deadline. I hope mine gets in. I'm not sure if this column will be printed in the correct month, as I'm getting it to the editor rather late, but I still can hope.

As far as the meetings go, if you want to see a particular demonstration of soft or hardware, let us know. We're always racking our brains to figure out what to do next. But remember, that that particular thing you want to see, might not be as readily available. And we would have to hunt for it. Maybe even, BUY IT, before it could be shown.

I hope the upgrade party went over OK. As I was not able to attend, due to previous commitments. I did try to do some small part by building a 256K board for reference. What did you do? And I'll offer any other assistance I can give to you as you use the upgraded memory. I use mine all the time, but mainly as a ram-disk. Someday I'm going to have to learn to program in machine language to make better use of the ram-disk.

That's it for this month. Hope you have had a fun and safe summer so far. Keep up the good work. And see you at the next meeting.

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* **REMEMBER!** *
* The AUGUST STARBASE MEETING will be AUCTION NIGHT. *
* Bring your unneeded hardware and software for the *
* auction. Bring lots of money & get a great deal!! *
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TREASURERS RAMBLINGS

By now, most of you have heard that Starbase has purchased its own 520ST, color monitor and external double sided disk drive. We also bought an NX-10 printer. Omar decided he needed a new printer, way more than he needed another computer. (I've been to his house and don't see where he'll put "anything new"!)

When the NX-10 was delivered, I used it for a few days. (I liked it so well, I ordered one too.) Anyway, with it's NLQ mode, you can really produce a nice looking letter. I found it to be a hair slow in the NLQ mode. At thirty characters per second, your not going to print the Gettysburg address in one night! But hey, I'll take NLQ at this rate, versus a big "0" NLQ on my old Delta 10-X. The normal draft rate is around 150 CPS. Not bad for a printer under two hundred smackers! The NX-10 has too many features to list here. Just ask all of us who have purchased them. They'll tell you the same thing. Good printer, for a cheap price. My Delta 10-X and 1027, plus additional ribbons, are for sale. For more info, call me and we'll dicker.

Well, thanks to the profits from Atari Trek '87, I now communicate with you, via a 520ST keyboard. Somehow, I was chosen to be the caretaker for the 520 and color monitor. (Doug has the new drive and Omar the NX-10 printer.) First of all, let me thank all of the Starbase members for trusting me to have it at all the meetings and miscellaneous other functions! This 520ST has the capability of being hooked up to any TV. When we go to a Pizza parlor or somewhere where we need a bigger screen, we've got it. Clarity is good, but I'm using the monitor for best results.

I can hear some of you saying "You said you'd never buy a 520." I didn't. WE bought it and frankly, I'm glad we did. My interest, in Starbase, was dwindling. Everything seems to be directed towards the "newer" machines. (I'll still push for 8 bit stuff, don't worry about that.) As long as I've got this thing, might as well use it, right? You all know that my big thing is not playing games, but word processing. With a copy of STWriter in hand (or computer), I'm continuing on with what I was doing before, writing letters. Besides the added speed, of the ST, there are many other features, that could lure you to buy one. (We can skip the obvious, like memory and availability of new products.) When using STWriter, one can make mistakes typing, right? This keyboard offers ways to speed correcting. No more holding down any two keys at once. Just place the cursor over the text to be deleted and hit the "Delete" key. The cursor stays right there and your mistake is gone. The "arrow" keys don't need two hands either. There are some things that take getting used to. This keyboard is one of them. (A midget must of designed it.) I feel like I'm that big kid sitting down to play a little dinky piano! Know what I mean? Some of the keys are in diferent places. And there are more of them, too! All in all, it's a great machine. And fun, too! Maybe I'll get into playing games again? You never can tell.

If you weren't at the July meeting, then you didn't hear me talk about the "new" computer store, opening up in Greenwood. 8541 Greenwood Ave., to be exact. By the time you read this, Cave Creek Computers should be open. (July 25th was their goal.) They told me they will be carrying Atari products. This usually means 16 bit only. We'll see.

Are you wondering how the treasury is, after all the "big" purchases have been made? We didn't spend it all. Our share, from Atari Trek, amounted to $1255.32. The total take, was around $8,000. (The lions share went to SPACE. Over half!) Anyway, we have $732.17 in the checking account. The 520ST, color monitor and drive came to $969.12. Family Computer gave us a good deal. The printer was $185, mail order.

Be looking for our ST library, to enlarge, real soon! From 25 to 100 disks will be added soon. I'm guessing, because we'll have to go through and sort out what we already have.

As I did in the past, once more I'm submitting PSAN to local magazine distributors. Now that we,ve taken on the glossy look and a true magazine format, I believe we have a good shot at getting one of them to carry us! Cornucopia came real close last time, but said to come back when we changed our format. We did and we're back! B Dalton Bookseller is already carrying PSAN, so if you forgot to renew your subscription or would like an extra copy, get over to Kenmore. Hey, go in and buy one anyway. Other computer user groups have publications out on the newstands, why not Atari!

Keep On Hacking,
Steve

MOD CLINIC, PART II

Report by Al Cummings

We just finished the first Atari Mod Clinic and it went very well. The newest version of the 800+ 288k upgrade worked out real well with some minor problems reading the poor docs and some electronic knowledge took care of the computers that had different operating systems installed. A big thanks to Andy, Joe, Max, and to Sam Sieben for the use of the shop and equipment and his helping hands. Everything went well and the whole thing was over in 8 hours. Everyone semed happy with the mods and what software we had to give them. Not bad for doing 9 mods and looking at several other things in the meantime.

The next clinic will be held August 22 starting at 12 noon. The mod this time will be for the 800XL and 1200XL using the Tom Lawless Board. This mod will give your computer 320K or for those who can never get enough, 576K. Same board fits in both models and the extra ram can be added later. The system ram (64K) stays in the machine and allows the computer to reset quickly compared to 10 seconds on some of the 256k mods. The prices are not firm at this time but the standard 320K upgrade should cost $40 and the 576K monster mod will add $30 or the chips and extra parts. There will be software that uses the extra ram and hopefully, Tom Lawless can make it to explain the uses and lend a hand soldering or tearing into the computers.

There was some people telling me they misunderstood the way the clinics worked. You do not have to work on your own computer. In fact there is not enough room for that. Instead we have people who know how to do this type of work and enjoy doing it help out and they did a fine job with less then was needed to figure out the whole job. So be sure and sign up and tell me you want the mod as we will not order any extras! Even if you might not make it that day, someone can bring your system for you, or, we can put it in later.

Also the mod for September will be the 130XE upgrade and if enough people want to do a mod we can plan that also. Let me know at the meeting.

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==========================================
=  "They tell me all the time about      =
=  computers being fixed. But nothing    =
=  is fixed."                            =
=                                        =
=  Sergio Echexabal, who had been        =
=  declared dead by the Social           =
=  Security Administration.(USA TODAY)   =
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STDIO

ATARI ST Computer Users Group

PRESIDENT	Jim Adams	488-3536
VICE PRESIDENT	Dave Hanthorn	232-3009
SECRETARY	Jim Yee	643-9697
TREASURER	Paul & Jolene Bolme	882-1536
EDITOR	Joel Check	881-9375
DISK LIBRARIAN	Mike Check	828-0258
PROGRAM CHAIRMAN	Bruce Noonan	775-0545
BBS SYSOP	Mike Check	828-0258

Meets: 1st and 3rd Mondays of the month at 7:00 PM at Data IO, 10525 Willows Rd., Redmond, WA.
BBS: STDIO, (206) 822-4085, 300/1200 baud.
Mail: STDIO, 16520 126th Ave. NE, Woodinville, WA 98072
Dues: $15 per year.

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* Newsletter submissions can be uploaded to our BBS, *
* brought to meetings, or via any acceptable method. *
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T.R.A.C.E.

The Richmond ATARI Computer Enthusiasts

Meets: 2nd Wednesday of the month.
Contact: Terry Schreiber (604) 272-5789
BBS: T.R.A.C.E., (604) 272-5888, 24hr, 300/1200 baud
Mail: P.O. Box 1192, Postal Station A, Delta B.C. V4M3T3; or from the U.S. use: P.O. Box 2037, Point Roberts, WA 98281

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* MEETING NOTICE! *
* Summer Break! No meetings during July and August. *
* See you in September! *
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CLASSIFIED ADS

For The Members By The Members

FOR SALE: Atari 1040 ST computer - monochrome system. Has very little use since new (I just don't have any space time)! Includes Personal Pascal, ST Talk, Swift Calc, and two Abacus books. My cost was $1220. Asking $700 or best offer. Contact Bob Gilbert at 668-9640 (Snohomish), any evening. Leave message on recorder if not at home.

FOR SALE: Atari 1040 ST computer system with lots of software and other goodies. Call Alex Ancheta at 675-7628 (Oak Harbor) for details and prices.

FOR SALE: - Okimate 20 Color Printer. Prints over 160 colors. Includes Atari ST "Plug 'n Print" interface, thermal transfer paper and ribbons. $150.
- Solid pine computer desk with glossy finish. Dimensions are: 48" wide, 27" deep, and 28" high. Comes with monitor stand, too. Excellent condition. $40.
Contact Matt Martin at 848-0169 (Puyallup).

CALLERS WANTED: Atari Citadel BBS (ST) in Moses Lake, WA. (509) 762-9357. Jerry Wright (long time Atarian) is SYSOP.

FOR SALE: Printers: Star Delta 10-X w/extra ribbons and Atari 1027. Both work fine. Best Offer Takes All! (BOTA). Call Steve at 782-3691 (Seattle).

WANTED TO TRADE: 320K 130XE computer for stock 800XL. Call Al at 784-8658 (Seattle).

FOR SALE: Computer System/Components/Pieces:
- Computer: 800XL w/256K: $75.
- Drives: 1050 Doubled: $124.99, 2 for $224.99. 1050 Single: $99.99. 810 Happy: $144.99. US Doubler w/Sparta Dos for 1050: $35.
- Other: Basic XE complete/new: $40. Black and White Monitor (well, it's really a tv): $25.
- BONUS: Free Couch (You Haul)! 3 boxes of new disks to the first buyer!
Contact Terry at 526-0719 (Seattle).

MEMBERSHIP INFORMATION

You are cordially invited to join your local Atari computer user's group. All models of Atari computers (400 thru ST's) and all levels of computer experience (from beginner to professional programmer) are represented. Membership benefits include: a great monthly newsletter; access to the latest Atari news, information, & public domain libraries; associate with others having similiar interests (make new friends!); problem solving; hardware upgrades; regular meetings; classes/special events; and discount purchasing.

Interested? The Club News section contains a listing of area clubs, their addresses, persons to contact, and annual dues. Please fill out the membership form below and send it along with check/money order dues payment to the users group of your choice.... or come to any meeting (visitors are always welcome) and join up there!

MEMBERSHIP APPLICATION/RENEWAL

Name _____
(LAST) (first) (initial)
Street _____
City _____ State _____ ZIP _____
Telephone (optional): Home ____-_____, Work ____-_____ ext. ____

SYSTEM CONFIGURATION

Computer Model: _____ w/____K RAM, # of Disk Drives _____
Modem _____ Printer _____ Other _____
Primary Interest: _____
I can help with/comments: _____

Amount Enclosed: _____. Starting Month _____. Check if Renewal _____.

cut out

BEST ELECTRONICS

HARDWARE: 520ST/1040ST/SF314/SF354/SH204

Atari Service Manual SF314/SF354 Disk Drive	C070624	$40.00
Atari Service Manual 520ST Computer	C026118	40.00
Atari Service Manual 520ST/1040ST Computer	C020118	50.00
Atari Service Manual SC1224 Monitor	C070433	40.00
Atari Service Manual XMM801 Printer	C070435	40.00
Atari Service Manual SMM804 Printer	C070434	40.00
Atari ST Diagnostic Cartridge	CA026297	80.00
Atari ST Diagnostic Assembly complete, Cartridge and Documentation (ST, SF354, SF314, SC1224, SMM804, Loop Back Cables)	C026287	350.00
ST EPROM Cartridge 64K/128K/256K/ROMS	CA030701	15.00
ST Mouse Mat		6.00 - 8.00
ST Mouse House		6.50
ST Clocks		CALL
ST One to Four Meg RAM Upgrades		CALL
Sams Computerfacts Service Manual 520ST		40.00
520ST Mother Board	CA070052	CALL
520ST Power Supply	C070099	60.00
520ST 7 Pin DIN Rt. Angle Power Receptacle	C070135	2.50
520ST Power Switch	C061022/C070006/C061913	1.25
520ST Keyboard Assembly	CA070022	90.00
520ST Owners Manual	C026051	6.00
520ST Bottom Housing	CA070016	CALL
520ST Top Housing	CA070020	CALL
520ST Dust Cover		8.50
520ST/1040ST Switch Reset	C070119	2.50
520ST/1040ST R.F. Modulator	C070491	50.00
520ST/1040ST 13 Pin Monitor Rt. Angle Receptacle	C070134	3.00
520ST/1040ST 14 Pin Disk Drive Rt. Angle Recept.	C070131	3.00
520ST/1040ST 13 Pin Monitor Connector		4.00
520ST/1040ST 14 Pin Disk Drive Connector		4.50
520ST/1040ST Rt. Angle Cartridge Connector	C070129	4.00
520ST/1040ST DB-19 Rt. Angle Hard Disk Connector	C070130	4.00
520ST/1040ST DB-25 Male Modem Connector	C070132	1.50
520ST/1040ST DB-25 Female Printer Connector	C070133	1.50
520ST/1040ST Keyboard Keycap Kit	C070258	22.00
1040ST Internal Power Supply	CA070059	68.00
1040ST Keyboard Assembly	CA070057	90.00
1040ST Mother Board	CA070097	CALL
1040ST Dust Cover		8.50
68 Pin Square I.D. Socket	C070120	6.00
ST I.C. Retention Clip, 69 Pin Square I.C. Socket	C070718	.50
3½" SSDD Epson Drive Transport	C070219	128.00
3½" DSDD Newtronics Drive Transport	C070350	165.00
3½" DSDD Chinon Drive Transport	C070352	165.00
SF300 Series Disk Drive Power Supply	C070091	45.00
SF300 Series Drive I/O Board	CA070063	40.00
SF354/SF314 Disk Drive Dust Cover		8.50
SF354 Owners Manual	C026052	2.00
3½" Dysan Alignment Disk, SSDD		40.00
3½" Dysan Alignment Disk, DSDD		55.00
ST Series Mouse	CA070025	50.00
ST Series MIDI 5 - 6 Ft. Cable		6.00
1040ST/SH204/SM124 Power Cord	C070349	6.50
1040ST/SH204 Hard Disk 1 to 2 "Y" Power Cord		10.00
SH204 Hard Disk I/O Cable	C026170	24.00

CONNECTOR/RECEPTACLES

5 Pin DIN Rt. Angle Receptacle (Monitor/ST Midi)	C014388	$ 1.00
7 Pin DIN Rt. Angle Receptacle (XL/XE)	C010448	1.25
7 Pin DIN Connector (XL/XE Power Supply)		1.20
7 Pin DIN 520ST Rt. Angle Power Receptacle	C070135	2.50
9 Pin DB-9F Joystick Receptacle	C010448/FK100307/C019062	1.10
9 Pin DB-9F Female Connector (850)	C015581-09	1.30
DB-19 520ST/1040ST Rt. Angle Hard Disk Connector	C070130	4.00
DB-19 520ST/1040ST Solder Cup Connector		3.50
DB-19 520ST/1040ST Hoods		1.50
DB-25 520ST/1040ST Modem Connector	C070132	1.50
13 Pin I/O Cable Connector		3.00
13 Pin I/O Receptacle	C012995	2.50
13 Pin 520ST/1040ST Monitor Connector		4.00
13 Pin 520ST/1040ST Rt. Angle Receptacle	C070134	3.60
14 Pin 520ST/1040ST Disk Drive Connector		4.50
14 Pin 520ST/1040ST Disk Drive Receptacle	C070131	3.75
15 Pin DIN Joystick Receptacle (5200)	C018013	1.30
15 Pin DIN Female Connector (850)	C015581-15	2.00
16 Pin Double-sided Header w/Gold Plated Pins		1.25

CABLES

1 Foot I/O Cable (drive to drive)		$10.00
Atari 3 ft. I/O Cable	CA014122	10.00
CX81 6 ft. I/O Cable	CA015900-01	12.00
CX89 Color Monitor Cable		9.00
Atari CX86 825 Printer Cable	CA015900-02	15.00
Atari CX87 Modem Cable (DB-9 to DB-25)	CA015900-03	12.00
Atari CX88 Terminal Cable (DB-9 to DB-25)		13.00
850 to Printer Cable (DB-15 to Centronics Connector)		15.00
Monitor Cable (5-pin DIN to 4 RCA connectors)		4.50
"Y" Paddle Cable	C010810/FK100305	3.00
Joystick Cable (6 cond.)	CA018145/FK100306	1.50
Joystick Cable (8 conductor 1-inch leads, #8 wire clipped)		3.00
Joystick Cable (9 conductor)		3.95
Joystick "Y" Cable Adaptor (1M to 2F)		8.00
1040ST 6" - 12" Joystick/Mouse Ext. Cable		8.00
1040ST 12" Joystick/Mouse "Y" Cable (2M to 1F)		8.00
520ST/1040ST 3 ft. Disk I/O Cable	C070139	16.00
520ST/1040ST 6 ft. Disk I/O Cable		18.00
520ST/1040ST Monitor Cable	C070264	20.00
520ST/1040ST 6 ft. Printer Cable		10.00
520ST/1040ST 12 ft. Printer Cable		18.00
520ST/1040ST 6 ft. Modem Cable		12.00
520ST/1040ST Hard Disk I/O Cable	C026170	24.00
ST Series Midi 5 - 6 ft. Cable		6.00
Midi or Monitor 6 ft. Extension Cable		6.00
3 ft. to 15 ft. Coiled Joystick/Paddle Extension Cable (1M to 1F)		10.00
6 ft. or 12 ft. Joystick/Paddle Ext. Cable		5.00 / 7.00
10 ft. or 20 ft. Joystick/Paddle Ext. Cable		6.00 / 8.00
850 to Printer 6 ft. Ext. Cable (DB-15F to DB-15M)		9.00
850 to Printer 12 ft. Ext. Cable (DB-15F to DB-15M)		12.00
5200 Controller Cable Assembly	CA018145	4.90
6 ft. or 12 ft. 5200 Joystick Ext. Cables		9.00 / 12.00

HARDWARE: Controllers/Accessories**

Atari Paddles	CX30	$12.00
Atari Paddle Label	C012766	.20
1 Meg Potentiometer for Paddles	C010464	1.00
"Y" Paddle Cable	C010810/FK100305	3.00
Paddle Knob	C010457	2.00
Paddle Fire Button	C010739	.75
Paddle Switch	CA011620	.75
Atari Joysticks (ea.) Call for any price change	CX40	9.00
Atari Remote Control Joysticks	CX42	30.00
Atari Proline Joystick	CX24 (ea.)	12.00
Joystick "Blaster" Module w/Adjustable Fire Rate Control		4.00
Wico Arcade Heavy Duty Joystick (Requires mounting)		12.00
Arcade Heavy Duty Fire Button		CALL
Atari Joystick Rubber Boot	C012109	.75
Atari Joystick Handle	C012116	1.25
Atari Joystick Rubber Feet (Set of 56)	88-1004	1.30
Atari Joystick P.C. Board	CA015396/CA012111	1.25
Atari Joystick Rebuild Kit (1 p.c. board & handle)		2.00
Joystick/Paddle "Y" Cable (1M to 2F)		8.00
Atari Joystick Cable (6-cond)	CA014058/FK100306	1.50
Atari Joystick Cable (8-conductor, #8 wire clipped/1-inch leads)		3.60
6 ft or 12 ft. Joystick/Paddle Ext. Cable		5.00 / 7.00
10 ft. or 20 ft. Joystick/Paddle Ext. Cable		6.00 / 8.00
3 ft. to 15 ft. Joystick/Paddle Coiled Ext. Cable		10.00
Atari 2600 CX55 Keyboard Controllers	CA012758 pr.	8.00
5200 Joystick Controller	CX52 ea.	27.00
5200 Joystick 6 ft. or 12 ft. Extension Cables		9.00 / 12.00
Atari 850 Interface	A850	125.00
Atari 1050 Disk Drive (Call for Price Changes)	A1050	159.00
Sams Computerfacts Service Manual 1050 Disk Drive		20.00
1050 Dust Cover		8.50
Atari XM301 300 Baud Direct Connect Modem	XM301	49.95
Atari 300/1200 Baud Modem	SX-212	99.00
Atari 80 Column Unit w/Parallel Printer Port For use w/High Resolution Monitors	XEP-80	79.00
CX85 Keypad	CX85	12.00
CX85 Keypad Field Service Manual	FD100176	30.00
Atari Light Pen	CX75	40.00
Atari Touch Tablet	CX77	50.00
Atari Touch Tablet Mylar		2.00
Atari Touch Tablet Pen		9.00
ICD PR Connection		79.00
ICD 1050 US Doubler		39.00
ICD 1050 US Doubler w/Sparta DOS Construction Set		69.00
ICD Sparta DOS Construction Set		39.00
ICD 800XL/1200XL 256K Rambo XL (Less RAM)		39.00
ICD R-Time 8 Clock Cartridge w/Battery		69.00
ICD Sparta DOS X Cartridge (DOS Cart)		69.00
ICD Multi I/O Box, RAM Disk, Parallel Printer Port, Modem Port Spooler, Hard Disk Interface (XL/XE Computers) 256K Model		199.00
ICD Multi I/O Box 130XE Adapter Board, Adds 2 extra Cart. Slots		19.00
ICD Multi I/O Box 80 Column Plug-In Board, Monochrome & RGBI Monitors		99.00
Kid's Keyboard Controller	CX23	8.00
Expand-A-Port P.C. Board: adds extra SIO Connectors to Daisy Chain		CALL
Video Touch Pad	CX21	8.00
Track Ball Controller	CX22 (ea.)	15.00
CX22 Track Ball Field Service Manual	FD1006600	20.00
Indy 500 Driving Controller	CA010866	10.00
Sears Arcade II Hand Controller	CA018292	12.00
7800 Controller Cable		3.50

DISK SUPPLIES

3½ Disk Mailers (up to 5 disks, 200 lbs test cardboard)		$ .70
5¼ Disk Mailers (up to 5 disks, 200 lbs test cardboard)		.80
Disk Hub Rings	20 for	1.10
3½ Disk Labels		CALL
3½ Plastic Disk Holder (5 disks)		1.00
5¼ Disk Labels (5 colors w/write protects)	20 for	.75
5¼ Plastic Disk Holder/Display (12 disks)		1.00
5¼ Disk Sleeves	50 for 2.50, 100 for 4.00, 500 for 15.00	
Quorum 5¼ Disk Notcher (all metal construction)		11.95
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AUGUST 1987
PUGET SOUND ATARI ACTIVITIES

SUN	MON	TUE	WED	THU	FRI	SAT
						1 SPACE MAIN MEETING 6 PM, A.P.P.L.E. CO-OP, S.RENTON !! DOORPRIZES !!
2	3 STDIO MEETING 7PM DATA I/O, REDMOND	4	5	6	7	8 SPACE TACOMA MEETING, 10 AM SOUTH END NEIGHBORHOOD CENTER, TACOMA
9	10 BRACE MEETING 7 PM LAKE HILLS LIBRARY, BELLEVUE	11 SPACE ST SIG MEETING 6 PM BUTLER'S FEDERAL WAY	12 KC-ACES MEETING, 7PM AT WEST PARK LANES, BREMERTON	13	14 STAR-BASE MEETING, 6 PM MOUNTLAKE TERRACE LIBRARY + AUCTION +	15 R-ATARI MEETING, 7 PM AT THE YMCA, OAK HARBOR
16	17 STDIO MEETING 7 PM DATA I/O, REDMOND	18	19	20 PSAN SEPTEMBER NEWSLETTER INPUT DEADLINE! BECOME FAMOUS WRITE FOR PSAN!	21	22 SPACE HARDWARE SIG MEETING 10 AM SOUTH END NEIGHBORHOOD CENTER, TACOMA
23	24 BRACE MEETING 7 PM LAKE HILLS LIBRARY, BELLEVUE	25 SPACE ST SIG MEETING 6 PM BUTLER'S FEDERAL WAY	26	27	28	MOD CLINIC,12AM PRECISION ELECTR 29
30	31					

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